Onan®

OPERATORS MANUAL AND PARTS CATALOG

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ONAN 2515 UNIVERSITY AVE. S.E. · MINNEAPOLIS, MINN. 55414

A DIVISION OF STUDEBAKER CORPORATION

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ONAN
ELECTRIC GENERATING PLANTS
JB
SERIES

967-320

9A568

PERFORMANCE CERTIFIED

We certify that when properly installed and operated this Onan electric plant will deliver the full power and the voltage and frequency regulation promised by its nameplate and published specifications. This plant has undergone several hours of running-in and testing under realistic load conditions, in accordance with procedures certified by an independent testing laboratory.

ONAN 2515 UNIVERSITY AVE. S.E. · MINNEAPOLIS, MINN. 55414
A DIVISION OF STUDEBAKER CORPORATION

IMPORTANT...RETURN WARRANTY CARD ATTACHED TO UNIT

GENERAL INFORMATION

THIS OPERATOR'S MANUAL PROVIDES INFORMATION FOR PROPER INSTALLATION, OPERATION, AND MAINTENANCE PROCEDURES OF YOUR ONAN UNIT. AN APPLICABLE WIRING DIAGRAM WAS ALSO INCLUDED AT TIME OF SHIPMENT. RETAIN FOR FUTURE REFERENCE!

WE SUGGEST THIS MATERIAL BE KEPT HANDY SO THAT IT CAN BE READILY REFERRED TO WHEN NECESSARY, EITHER FOR ORDERING PARTS OR MAKING EQUIPMENT ADJUSTMENTS.

FOR MAJOR REPAIR INFORMATION A SERVICE MANUAL IS AVAILABLE. IF A MAJOR SERVICE MANUAL, ADDITIONAL OPERATORS MANUAL, AND/OR WIRING DIAGRAM IS REQUIRED, CONTACT YOUR NEAREST ONAN DISTRIBUTOR. THERE WILL BE A CHARGE FOR THIS MATERIAL.

BE SURE TO INCLUDE COMPLETE ONAN MODEL, SPEC., AND SERIAL NUMBER AS SHOWN ON ONAN NAMEPLATE ATTACHED TO UNIT. THIS IS ESSENTIAL IN FURNISHING YOU WITH THE PROPER INFORMATION.

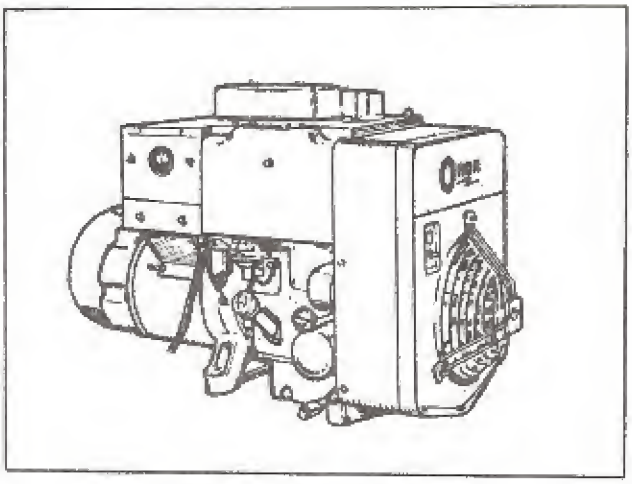
S/N July 1966 76C903404

MODEL No. 705JB-3R/4703P

Purchased from
Hathaway & Steane Co.
407 Wammertown Rd.
Suffield, Conn
203-668-7331
Mr. R. Golant
Mr T. Orr

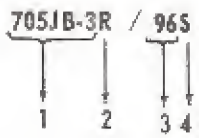
INTRODUCTION

When instructions in this manual refer to a specific model of generating plant, identify the model by referring to the *MODEL AND SPEC.* (specification) *NO.* as shown on the plant nameplate. Electrical characteristics are shown on the lower portion of the plant nameplate.



TYPICAL MODEL JB

How to interpret MODEL and SPEC. NO.



1. Factory code for general identification.
2. Specific Type:
   M - MANUAL type. Manually cranked For permanent or portable installations.
   E - ELECTRIC start type. Electric starting at the plant only.
   R - REMOTE type. Electric starting. For permanent installation, can be connected to optional accessory equipment for remote or automatic control of starting and stopping.
   MV or *RV - VACU-FLO* type. Same as *M* or *R*, with reversed (front end duct) cooling air flow.
3. Factory code for optional equipment.
4. Specification (Spec.) letter (advances when factory makes production modifications).

MANUFACTURER'S WARRANTY

The Manufacturer warrants, to the original user, that each product of its manufacture is free from defects in material and factory workmanship if properly installed, serviced and operated under normal conditions according to the Manufacturer's instructions.

Manufacturer's obligation under this warranty is limited to correcting without charge at its factory any part or parts thereof which shall be returned to its factory or one of its Authorized Service Stations, transportation charges prepaid, within one year after being put into service by the original user, and which upon examination shall disclose to the Manufacturer's satisfaction to have been originally defective. Correction of such defects by repair to, or supplying of replacements for defective parts, shall constitute fulfillment of all obligations to original user.

This warranty shall not apply to any of the Manufacturer's products which must be replaced because of normal wear, which have been subject to misuse, negligence or accident or which shall have been repaired or altered outside of the Manufacturer's factory unless authorized by the Manufacturer.

Manufacturer shall not be liable for loss, damage or expense directly or indirectly from the use of its product or from any cause.

The above warranty supersedes and is in lieu of all other warranties, expressed or implied, and of all other liabilities or obligations on part of Manufacturer. No person, agent or dealer is authorized to give any warranties on behalf of the Manufacturer nor to assume for the Manufacturer any other liability in connection with any of its products unless made in writing and signed by an officer of the Manufacturer.

DATED AUGUST 1, 1963

SPECIFICATIONS

M= manual Start
R= remote start (electric crank)

	Model Series 5JB* 6JB**		601JB* 706JB**		6JB* 705JB**	
	M	R	M	R	M	R
Nominal dimension of plant (inches)						
Height	25	25	25	25	25	25
Width	18	18	18	18	18	18
Length	36	36	41-3/8	36	37	37
Number cylinders (vertical inline)	2	2	2	2	2	2
Displacement (cubic inch)	60	60	60	60	60	60
Cylinder bore	3-1/4	3-1/4	3-1/4	3-1/4	3-1/4	3-1/4
Piston stroke	3-5/8	3-5/8	3-5/8	3-5/8	3-5/8	3-5/8
RPM (for 60-cycle)	1800	1800	1800	1800	1800	1800
RPM (for 50-cycle)	1500	1500	1500	1500	1500	1500
Compression ratio	6.5:1	6.5:1	6.5:1	6.5:1	6.5:1	6.5:1
Compression ratio, Gas only and LPG beginning Spec S	9.2:1	9.2:1	9.2:1	9.2:1	9.2:1	9.2:1
Compression ratio, Penn. State natural gas powered plants only	9.2:1	9.2:1	9.2:1	9.2:1	9.2:1	9.2:1
Oil Capacity (quarts)	3***	3***	3***	3***	3***	3***
Ignition (type)						
Battery	No	Yes	No	Yes	No	Yes
Flywheel magneto	Yes	No	Yes	No	Yes	No
Battery voltage (ac plant)	None	12-V	None	12-V	None	12-V
Battery size (ac plant):						
SAE group 1H	—	two in series	—	two in series	—	—
SAE group 3KMB	—		—		—	One
Amp/hr. SAE rating - 20-hr (nominal)	—	105***	—	105***	—	72
Starting by hand crank only	Yes	No	Yes	No	Yes	No
Starting by exciter cranking	No	Yes	No	Yes	No	No
Starting by starting motor with solenoid shift & over-run clutch	No	No	No	No	No	Yes£
Battery charge rate amperes	2	2	2	2	2	2
Ventilation Required (cfm 1800 rpm)						
Engine (Pressure Cooling)	520	520	520	520	520	520
Engine (Vacu-Flo Cooling)	610	610	610	610	610	610
Generator	75	75	75	75	126	126
Combustion	32	32	32	32	32	32
Output rated at unity power factor load	All	All	All	All	1-phase	1-phase
Output rated at 0.8 power factor load	No	No	No	No	3-phase	3-phase
Rating (output in watts)						
*50-cycle AC intermittent service	5000	5000	6100	6100	6000	6000
*50-cycle AC continous service	4000	4000	6100	6100	6000	6000
**60-cycle AC intermittent service	6000	6000	7600	7600	7500	7500
**60-cycle AC continous service	5000	5000	7600	7600	7500	7500
AC voltage regulation in ± %	5	5	5	5	3	3
AC frequency regulation in %	5	5	5	5	5	5
Revolving armature generator	Yes	Yes	Yes	Yes	No	No
Revolving field generator	No	No	No	No	Yes	Yes
120/240-volt single phase model reconnectible	No	No	No	No	Yes	Yes
Rotating type exciter	Yes	Yes	Yes	Yes	No	No
Static type exciter (Magneciter)	No	No	No	No	Yes	Yes

*Basic 50-cycle model

**Basic 60-cycle model

***Below 0°F use SAE group 1H size batteries in series for 105 amp. hrs., 12-volts.

****Add 1/2 quart for filter

£Pennsylvania approved models use continously meshed gear starting motor (Prior to Spec R).

OPTIONAL EQUIPMENT

1. **GAS-GASOLINE CARBURETOR:**
A combination carburetor for burning gasoline fuel or gaseous fuel.

2. **LOW OIL PRESSURE CUTOFF:**
Stops plant if oil pressure fails or becomes excessively low. Requires modified control on plant by adding emergency relay with reset button and resistor.

3. **HIGH AIR TEMPERATURE CUTOFF:**
Stops plant if temperature of engine discharged air rises too high. Cylinder head mounted.

4. **AIR SHUTTER:**
Thermostatically controlled. Limits air flow when cold to accelerate warm-up. Minimizes cold back drafts when engine is stopped.

5. **DRIP PAN AND VIBRATION ISOLATORS:**
Especially suitable for marine applications. Plant can rock on its mounts approximately 2-inches in all directions.

6. **SWITCHBOARD:**
Contains instruments to measure ac amperes, ac volts, and to break over-loaded ac circuit. For wall mounting.

7. **AC RECEPTACLES:**
Convenient for plugging in ac loads if needed. K-130 receptacle outlet

8. **OIL BASE HEATER AND THERMOSTAT:**
Electric heater aids cold starting.

9. **IMPULSE MAGNETO:**
For manually cranked models only (replaces flywheel magneto).

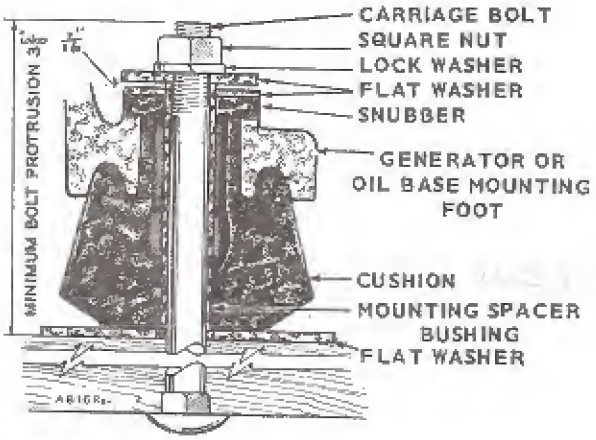
10. **OIL BATH TYPE AIR CLEANER:**
This high efficiency air cleaner is recommended for use in extreme dusty dirt, or other severe conditions. Usually mounted separately from the plant for efficient operation and easy service.

11. **AUTOMATIC DEMAND CONTROL:**
Starts and stops plant automatically.

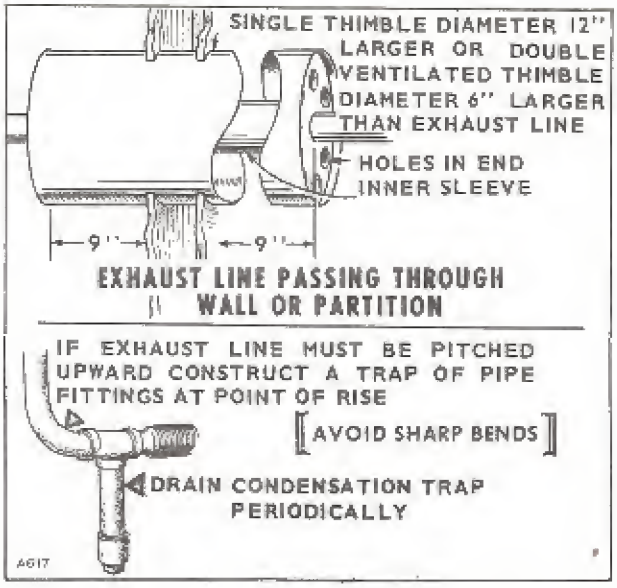
12. **LOAD TRANSFER CONTROL:**
Controls running of plant and transfers load.

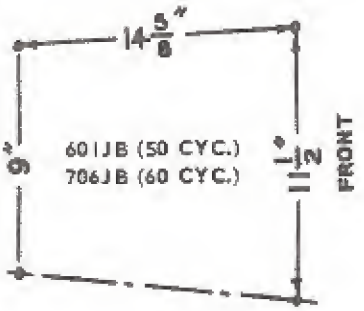
13. **SEPARATE FUEL TANK:**
Various sizes.

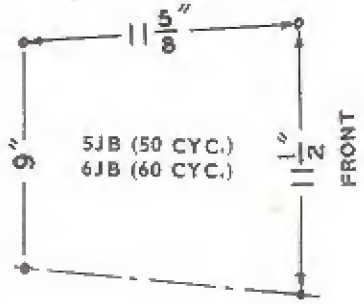
14. **OTHER:**
There is a series of other optional items that your dealer will discuss with you. Ask about them.

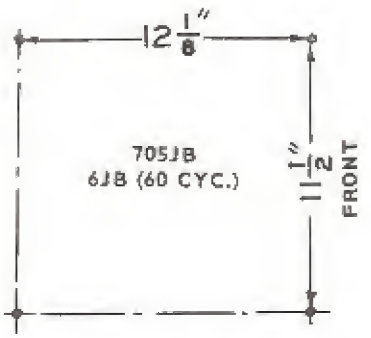


MOUNTING CUSHIONS

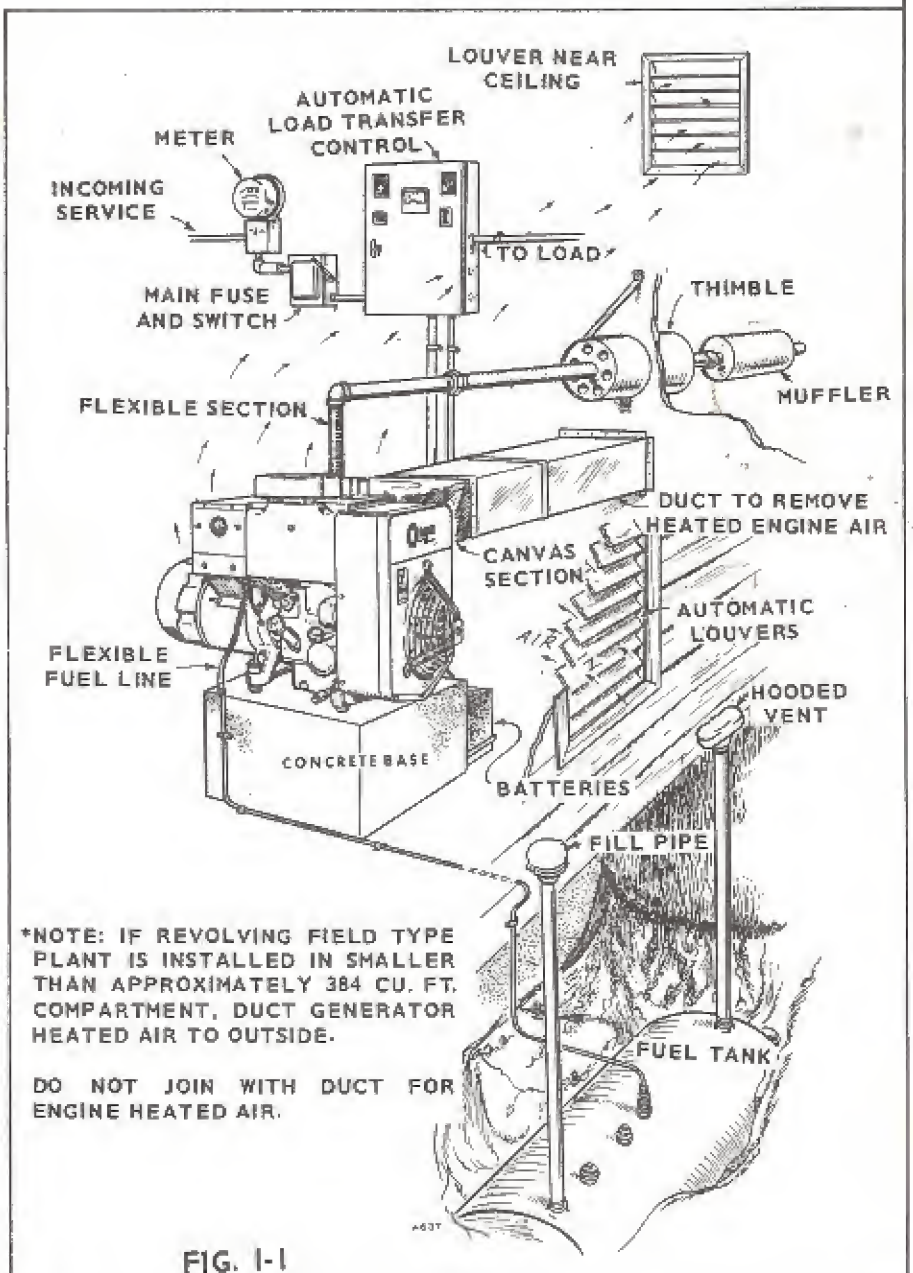








MOUNTING BOLT LOCATIONS

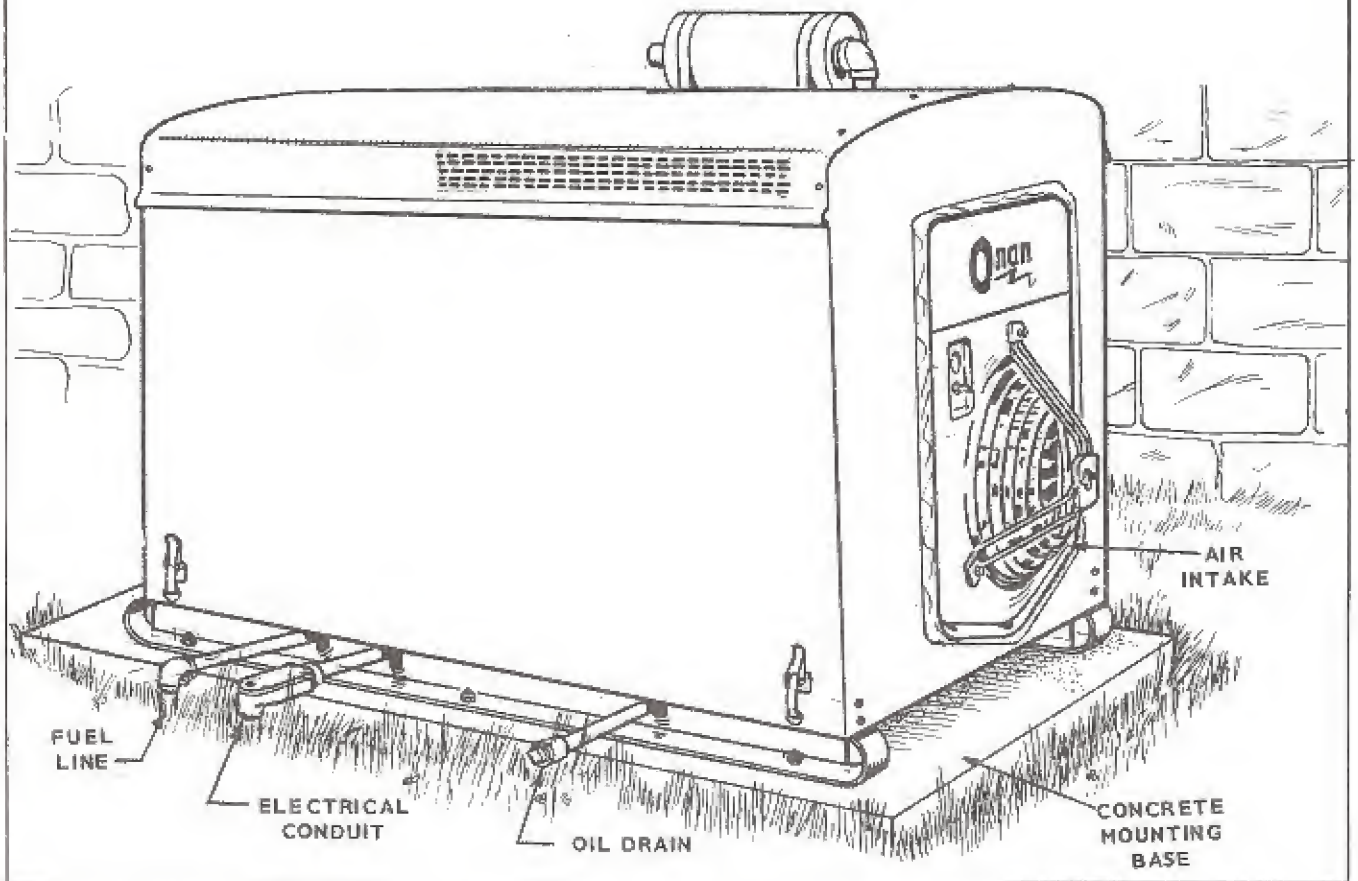


*NOTE: IF REVOLVING FIELD TYPE PLANT IS INSTALLED IN SMALLER THAN APPROXIMATELY 384 CU. FT. COMPARTMENT, DUCT GENERATOR HEATED AIR TO OUTSIDE.

DO NOT JOIN WITH DUCT FOR ENGINE HEATED AIR.

FIG. 1-1

STANDBY INSTALLATION



MOBILE INSTALLATION

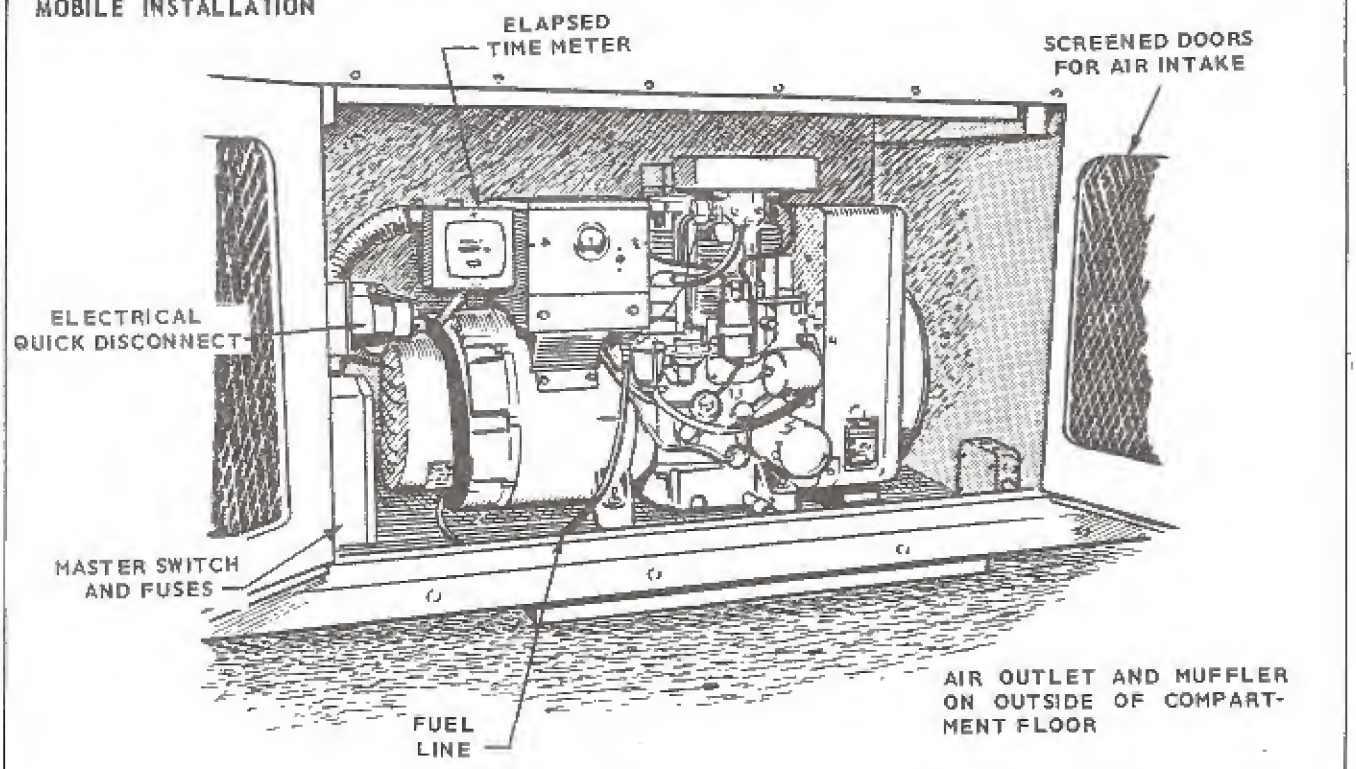


FIG. 1-2

INSTALLATION

GENERAL

Important installation points are: sufficient cooling, exhaust gas discharge, electrical and fuel connections, location and mounting, and protection from road dust and shocks during transit (mobile applications). For additional information on mobile installations, see Onan publication T-012.

Each installation must be considered individually – use these instructions as a general guide. Always check local building codes, fire ordinances, etc., for compliance. Provide a location that is protected from the weather, dry, dust free, and preferably warm in cold weather. The air discharge side of plant requires only 3" clearance from wall to permit plant to rock on its mounts but at least 24" clearance is required around all other sides for service accessibility.

MOUNTING (See Fig. 1-1)

A permanent installation needs a sturdy, level, mounting base of concrete, heavy wood or structural steel at least 12" high to aid oil changing and operating. For mobile applications (trucks or trailers) install slide-out rails or some other means (such as doors) to provide service space. (See Fig. 1-2 and 1-3).

Carefully assemble the mounting cushions, washers and spacer bushing (Fig. 1-1). The spacer bushing prevents compression of the snubber (upper rubber cushion). Space the 7/16" mounting bolts as shown in Fig. 1-1

Caution: 1/2" clearance is required between oil filter and mounting bolt to avoid puncturing filter.

VENTILATION AND COOLING

Air circulation is needed to dissipate heat produced by the engine and generator in normal operation. *Outdoor* installations can rely on natural circulation, but *mobile, indoor or housed* installations need proper size and positioned vents for required air flow. See specifications for the air requirements at 1800 rpm.

Vent sizes depend on variable conditions: (1) size of enclosure, (2) ambient temperature, (3) electrical load, (4) running time, (5) restrictions imposed by screens, louvers, shutters, or filters, (6) prevailing wind direction. *Remember that a required volume of air must reach the unit, absorb the heat, and be discharged away from the installation.* Pressure cooled units need an inlet vent with an unrestricted opening of at least 3-1/2 sq. ft. for variables. For discharged air, install separate ducts from the engine and generator (see exception) as follows:

1. *The engine discharge duct* must be the same size as the engine outlet, 8 x 10". If a screen is used in the duct, increase the duct size in proportion to the restriction. Consider installing the screen diagonally to limit the restriction and increase duct size for runs over 9-feet. If bends are necessary, use larger radius elbows.

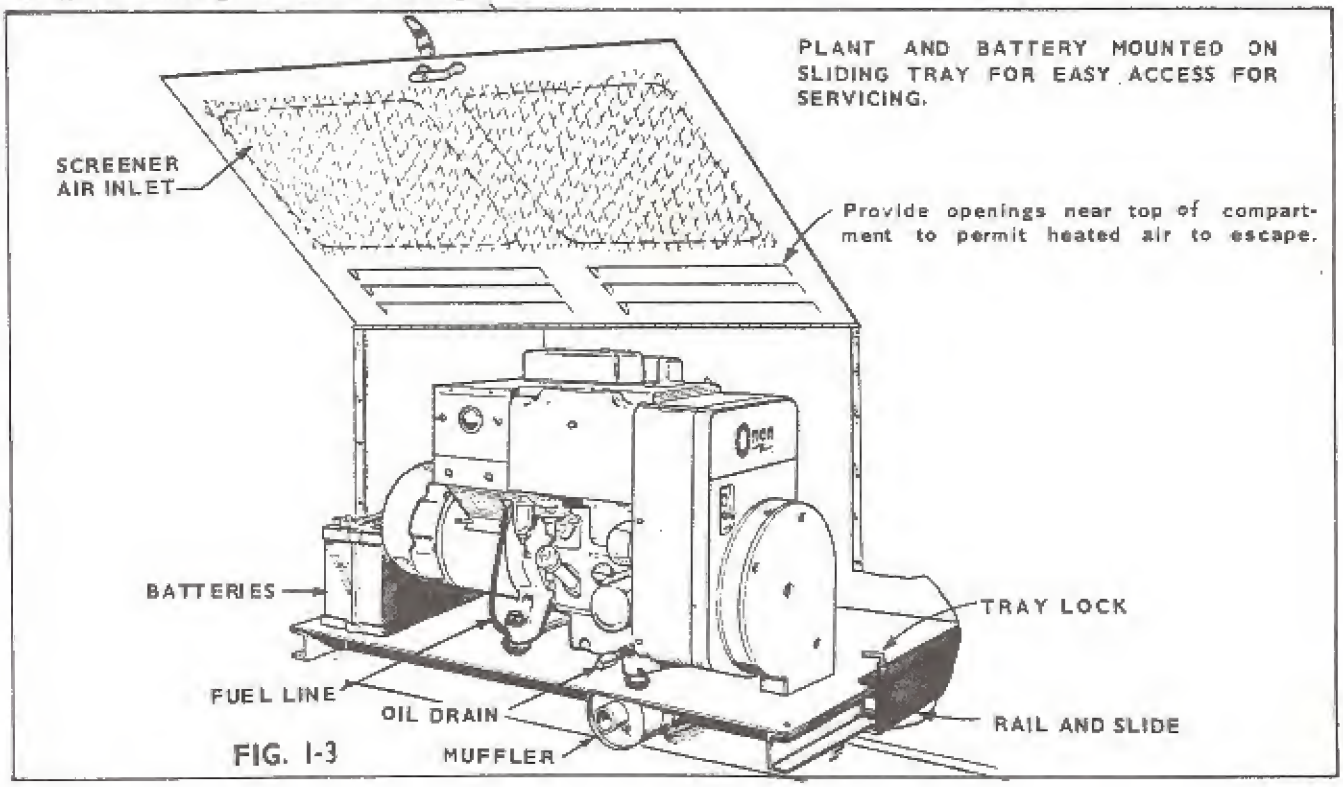


FIG. 1-3

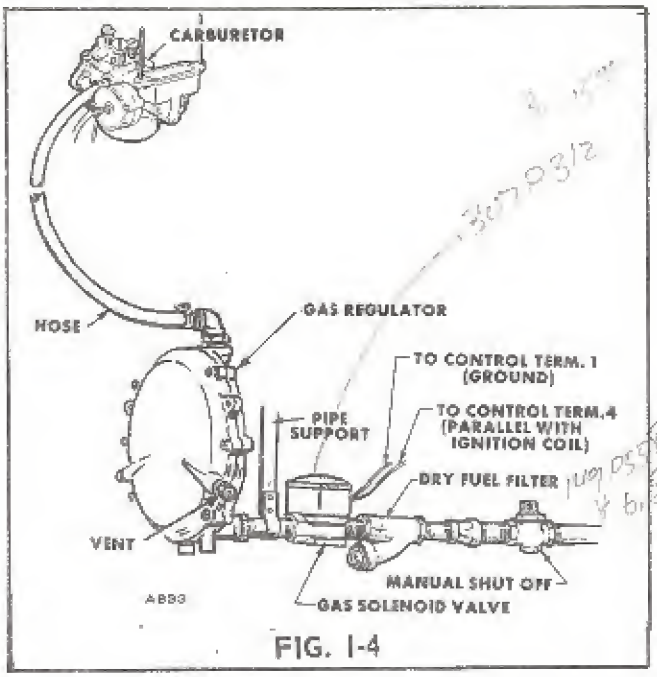


FIG. 1-4

Use a canvas section at the plant to absorb vibration (Fig. 1-1). To minimize vapor lock, pitch the duct upward (toward the outlet) so heat can escape when unit is shut down.

2. *Generator outlet* ducts are not used on revolving armature generators. With revolving field type units installed in compartments (too small for operator to walk in), ducts are a must and are also recommended for all other indoor installations. The air outlet is 5-5/8 x 3". Follow the same principles of duct design and installation as used for the engine duct. Engine and generator require separate ducts.

Vacu-Flo Cooling Inlet Vent (see specifications for air flow). should be at least 1/3 sq. ft., the duct for discharged air should be at least as large as the scroll outlet.

Auxiliary fans can be used to increase air flow to units installed in small, poorly ventilated, rooms. The fan size and location should be such that the air inlet to the engine doesn't exceed 120°F when running at full rated load.

Thermostatically controled shutters can be used to speed warm up after starting and keep cold air out during shut-down. Optional high temperature cut-off switch on some plants stop the plant if temperature becomes excessively high. The unit cannot be re-started until the switch temperature drops.

EXHAUST

Pipe *POISONOUS* exhaust gas outside enclosure. Locate exhaust outlet far from air inlet to avoid recirculation. The engine exhaust is tapped for 1-1/4" thread. Use flexible tubing to connect the engine exhaust to rigid pipe or muffler. Shield the line if it passes through a combustible wall (Fig. 1-1). If turns are necessary, use sweeping (large radius) elbows. If pitched upward, install a condensation trap at point of rise. Increase one pipe size for each additional 10-feet in length.

OIL DRAIN

Extend to suit installation. Oil base has a 1/2" pipe tapped hole.

GASOLINE TANK

If a separate fuel tank is used, install the tank so the bottom is less than 8-feet below the fuel pump. The tank top must be below fuel pump level to prevent siphoning. Install a shut-off valve at the tank. When the fuel tank is shared with another engine, use a separate fuel line for each to avoid starving the plant.

If fuel lift *must exceed 8-feet*, install an auxiliary electric fuel pump at the fuel supply. Wire it in parallel with the ignition coil (ahead of resistor).

FUEL CONNECTION

For gasoline plants, connect the fuel line to the fuel pump inlet. Pump is threaded 1/8-27 NPTF (American Standard Internal Tapered Pipe Thread). **Important:** *Connect the plant to the fuel source with a flexible line to avoid line failure due to vibration.*

For gaseous plants (see Fig. 1-4) check with the local fuel supplier for gas regulations and line pressure. Provide a manual gas valve. A filter in the line may be necessary. Electric solenoid shut-off valves in the supply line are usually required for indoor automatic or remote starting installations. Connect solenoid wires to battery ignition circuit (Fig. 1-4) to open valve during running. Install a demand type gas regulator according to instructions and position it near the plant to aid starting.

Important: *Always use flexible tubing between engine and the gas demand regulator.*

GROUNDING

To prevent shock hazard, ground the plant. For permanent installations, connect a #8 or larger wire between:

(1) a separate ground pipe or rod penetrating into moist earth,

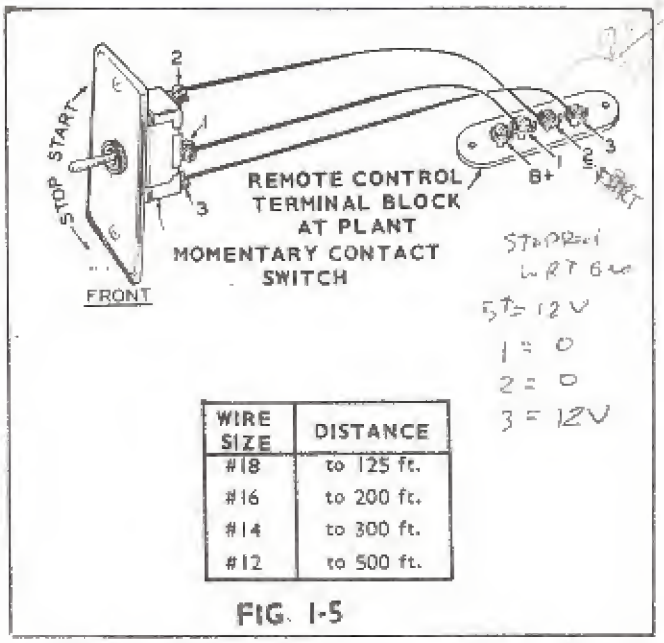
(2) and the solderless connector located on the generator (on models not so equipped, to the battery ground stud on the engine).

REMOTE START-STOP SWITCH (OPTIONAL)

For remote control starting and stopping, use 3-wires to connect the remote switch (SPDT, momentary contact, center-off type) to the terminal block marked B+, 1, 2, 3, in the plant control box using wire sizes as listed in Fig. 1-5

BATTERY CONNECTION

Plant with Starting Motor: (Begin Spec. P) plants are designed for negative (–) battery ground only. (Penn State Units NEG ground only). (Prior to Spec. P) Battery polarity connection must agree with the rectifier connection located in the control box. If battery ground must be changed, reverse the rectifier connection in the control, Fig. 1-6. *For Battery Connection see wiring diagram and Fig.* 1-7 and 1-8.



WIRE SIZE	DISTANCE
#18	to 125 ft.
#16	to 200 ft.
#14	to 300 ft.
#12	to 500 ft.

FIG. 1-5

Caution: *If battery polarity is wrong, damage will occur within 3-minutes while stopped or 5-seconds while running. Alternator windings will be damaged almost instantly if battery charging circuit is shorted before the resistor.*

See Specifications for minimum 12-volt battery requirements. Connect battery positive (+) to starter engaging solenoid terminal post, Fig. 1-7 . Connect battery negative (–) to a good ground on the engine.

BATTERY CONNECTION

Exciter Cranked Plant: (Begin Spec. P) plants are designed for negative (–) battery ground only. (Penn. State Units NEG ground only) Refer to wiring diagram and Fig. 1-8. (Prior to Spec. P) If battery ground must be changed, reverse the connections to the charge ammeter or re-mark the correct direction of charge. Crank electrically to flash field. Provide *two* 6-volt batteries connected in series (one battery's negative to other battery's positive) for a 12-volt source. See Specifications for minimum battery requirements. Connect the remaining battery positive (+) to the start solenoid (located in the control box). Connect the battery negative (–) to a good ground on the engine.

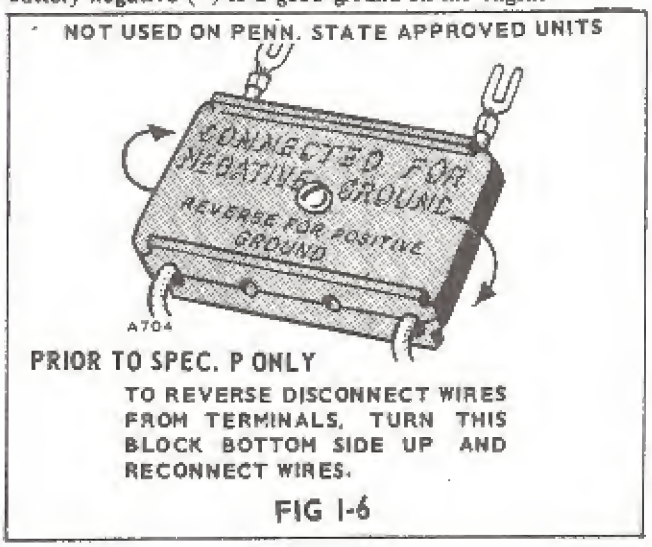


FIG 1-6

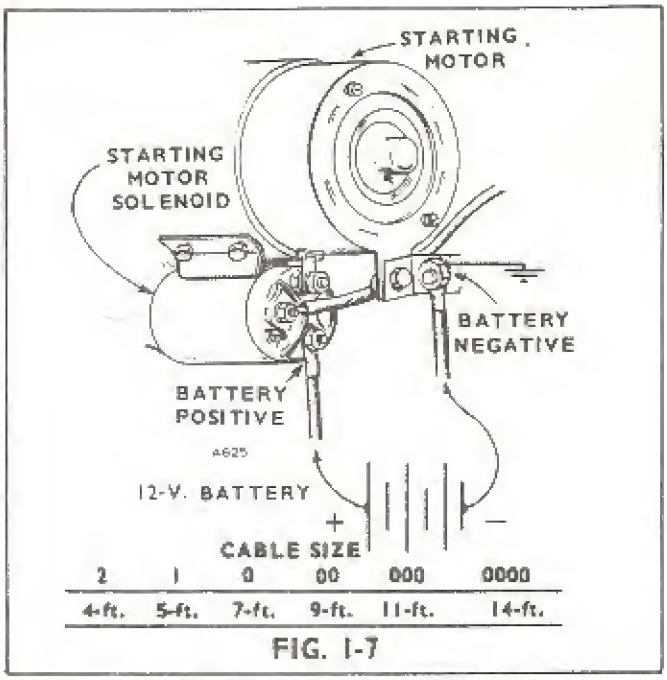


FIG. 1-7

LOAD WIRE CONNECTIONS

Plant nameplate shows the electrical output rating of the plant in watts, volts, and cycles. The plant wiring diagram shows the electrical circuits and connections necessary for the available output voltage. Also see Fig. 1-9 thru 1-14.

Meet all applicable electrical code requirements. Work should be done by a qualified serviceman or electrician because the installation will be inspected and approved.

The plant control box (junction box) has knock out sections to accommodate load wires. Use flexible conduit and stranded load wires near the plant to absorb vibration. Use sufficiently large insulated wires. Strip insulation from wire

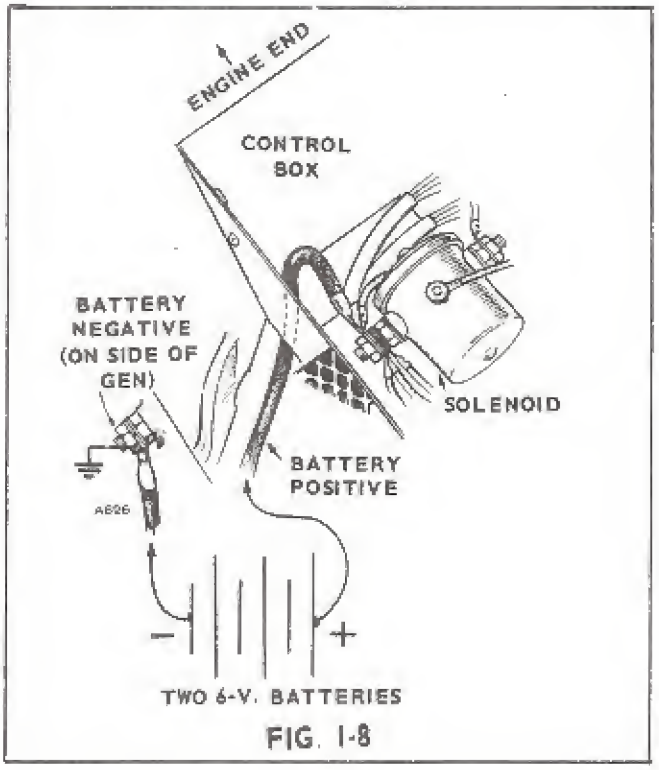


FIG. 1-8

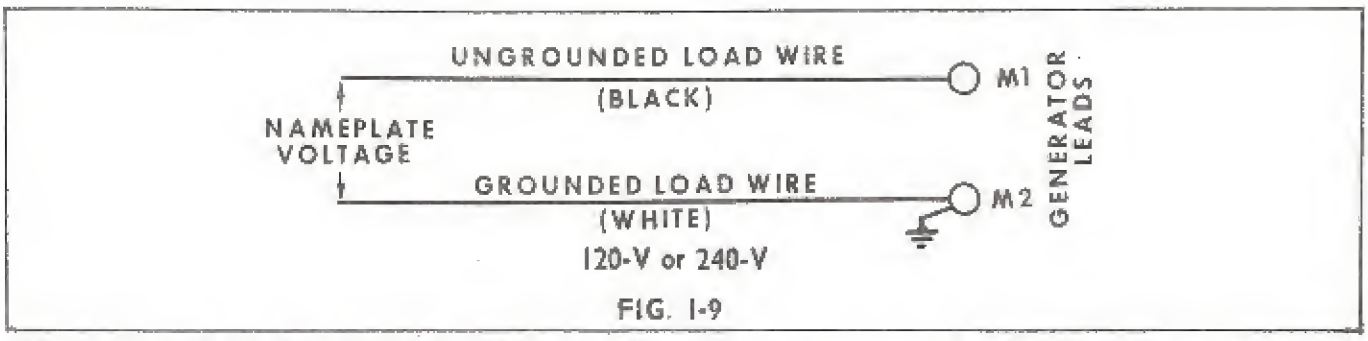


FIG. 1-9

ends as necessary for clean connections. Connect each load wire to the proper generator output lead inside the plant control box. Insulate bare ends of ungrounded wires. Use a bolt (through the control box) to connect the grounded (⏚) generator lead and load wire. Install a fused main switch (or circuit breaker) between the generating plant and load. If a test-run indicates wrong rotation of 3-phase motors in the load circuit, switch the connections at any two generator terminals.

Standby: If the installation is for standby service, install a double-throw transfer switch (either manual or automatic) to prevent feeding generator output into the normal power source lines and to also prevent commercial power and generator output from being connected *to the load at the same time*. Instructions for connecting an automatic load transfer switch are included with such equipment. See Fig. 1-1.

Balance All Loads: Current for any one output load must not exceed nameplate rating. Overloading can damage the generator windings. Divide the loads equally between output leads.

Single-Phase Loads on Three-Phase Generators: Any combination of single-phase and three phase loading can be used at the same time as long as the current for any one output lead does not exceed the generator nameplate rating.

Output Lead Markings: Revolving armature generator leads are marked M1, M2, etc. Comparable leads on revolving field generators are marked T1, T2, etc. These identifying marks also appear on the wiring diagram.

Voltage Selection on Reconnectible Single Phase Generators: Models 706JB-3CR and 705JB-3, (except when optionally equipped with meter panel, circuit breaker, etc.) are reconnectible for use as 120/240-volt 3-wire, 120-volt 2-wire, or 240-volt 2-wire power source (Fig. 1-11).

Delta Generator (Revolving Field Models Only): Generator lead T0 is the generator center tap between T1 and T2. The T0 lead is normally not grounded but can be grounded if required.

Load Connections: Refer to the figure which illustrates the load connection for the output shown on your plant's nameplate. See switchboard instructions here when a switchboard is used.

Switchboard: When an optional wall mounted switchboard containing ammeters, voltmeters, circuit breakers, is used, these load wire connections apply: Connect to the unused terminal of each ammeter, one ungrounded (hot) generator lead. Connect to the ground stud in the switchboard, generator leads and load wires which are to be grounded - if any. Connect to the unused terminal of each circuit breaker, one ungrounded (hot) load wire. On plants which generate more than one voltage, the voltmeter reads the higher voltage shown on the nameplate. The lower voltage is correct when the higher voltage is correct.

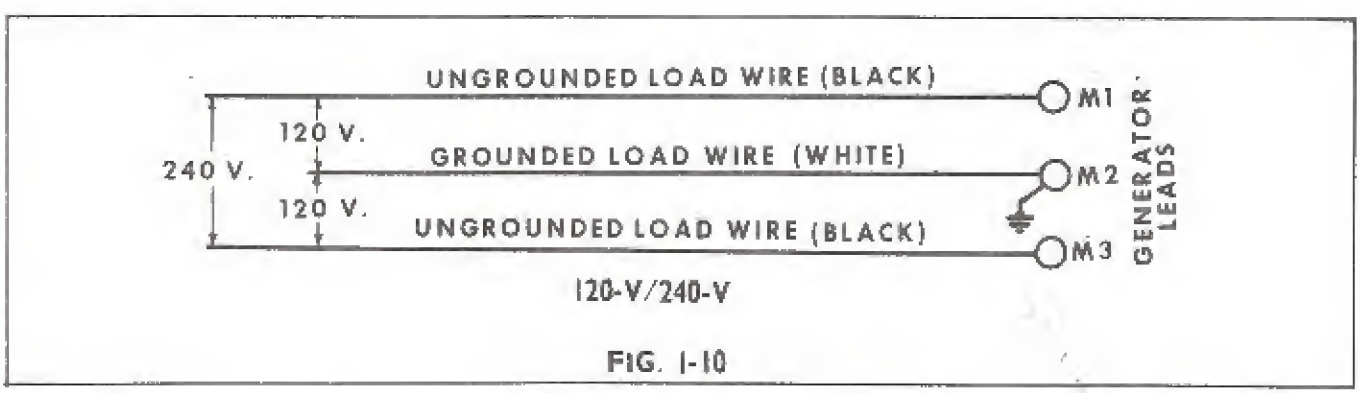
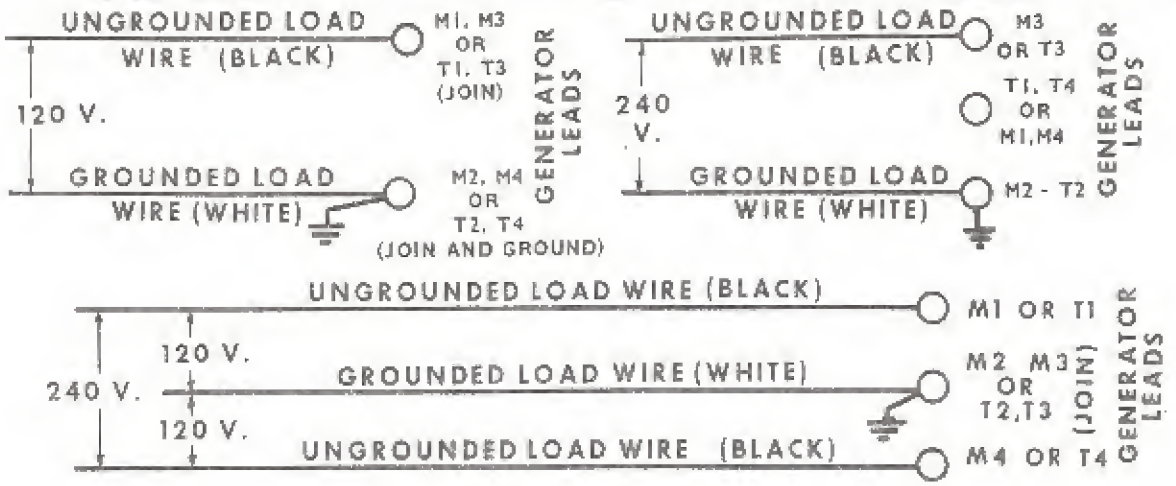
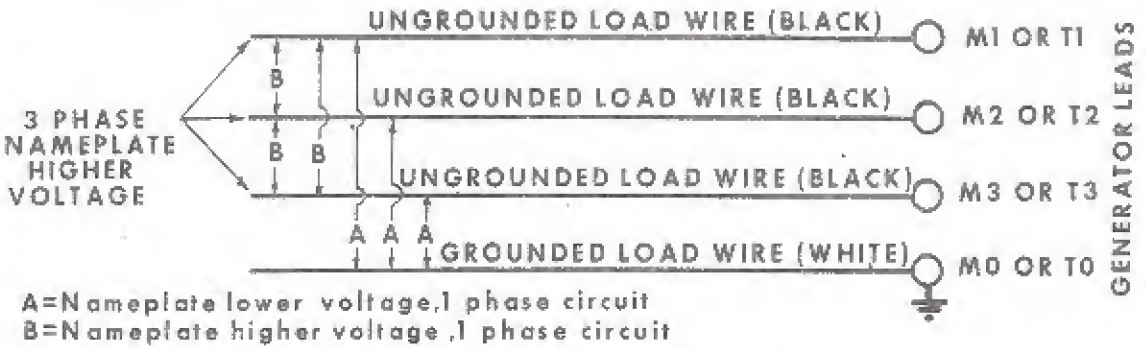


FIG. 1-10



1 Phase, Re-connectible Generator
(60-cycle model has code -3 or 3C; gives 2-wire or 3-wire service)

FIG. 1-11

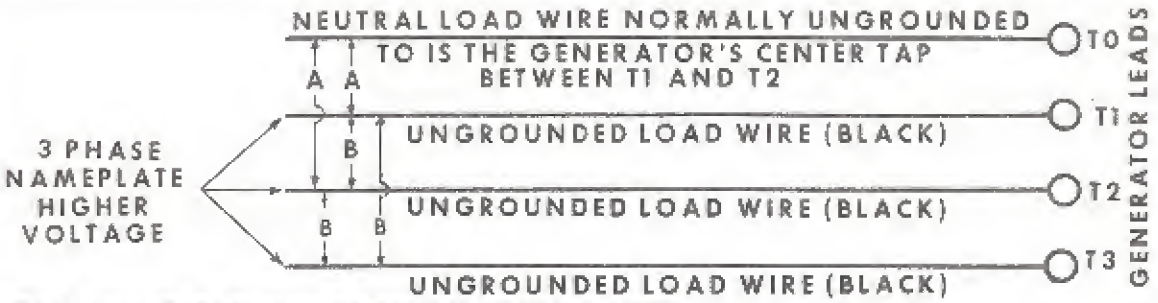


A=Nameplate lower voltage,1 phase circuit
B=Nameplate higher voltage ,1 phase circuit

(60-cycle 120/208-volt model has code -4; code -7 for 220/380-volt; code -4X for 277/480-volt)

Y–Connected

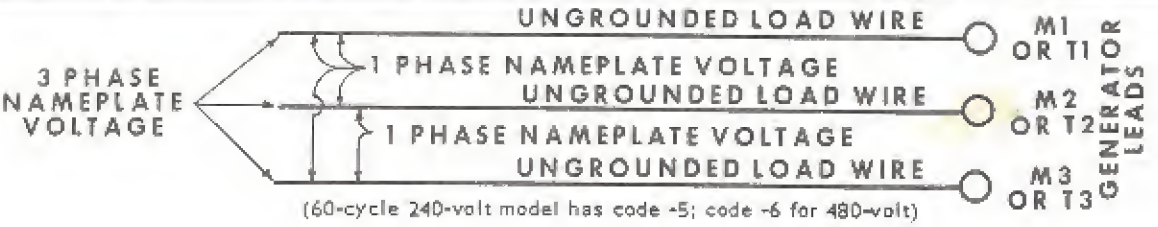
FIG. 1-12



A=Nameplate lower voltage,1 phase circuit
B=Nameplate higher voltage,1 phase circuit

Delta Connected (60-cycle 120/240-volt model has code -5D; code -6D for 240/480-volt)

FIG. 1-13



(60-cycle 240-volt model has code -5; code -6 for 480-volt)

FIG. 1-14

5W-20 OK to ≥ 70°F ambient
watch oil temp!
keep under 200°F
700°!

OPERATION

CRANKCASE OIL

Use a good-quality oil that meets the API (American Petroleum Institute) service designations MS, MS/DG, or MS/DM. Recommended SAE oil numbers for expected ambient temperatures are as follows:

30°F and above SAE 30 30°F and below SAE 5W-20

Do not use service DS oil. Do not mix brands or grades. Refer to Maintenance Section for recommended oil changes.

RECOMMENDED FUEL

Use clean, fresh, *regular* grade, automotive gasoline. *Do not* use highly leaded *premium* types. Never fill the tank when the engine is running and leave some fuel expansion space. Open fuel line valve (when used).

INITIAL START

Check the engine to make sure it has been filled with oil and fuel. Cylinder air housing door must be closed. If engine fails to start at first attempt, rust inhibitor oil used at the factory may have fouled the spark plugs – remove, clean in gasoline, dry thoroughly and install. Heavy exhaust smoke when the engine is first started is normal and is caused by the inhibitor oil.

STARTING (Electric Crank Models Fig. 2-2, 2-3)

(1) Push *start-stop* switch to *start* position.
(2) Release the switch after engine starts and reaches speed.
(3) Oil pressure gage should read at least 20 psi (pressure relief is not adjustable).
(4) If ac voltage does not build up on revolving field plants (magnetism lost) read Maintenance Diagnosis.

If the plant control has a re-set button, push it to re-set *only after* a shutdown resulting from oil pressure failure occurs. Find the cause before re-starting the engine. On early plants, re-set or temporarily switch to *manual* to start after oil filter change.

The adjustable resistor slide tap (in the charging circuit) is set to give approximately 2-ampere charging rate. For applications requiring frequent starts, check battery specific gravity periodically and, if necessary, increase the charging rate slightly (move slide tap nearer ungrounded lead) until it keeps the battery charged. Adjust only when plant is stopped. Avoid overcharging. The resistor is located in the generator air outlet of revolving field generators, or on rear of control box of revolving armature generators.

If a separate automatic demand control for starting and

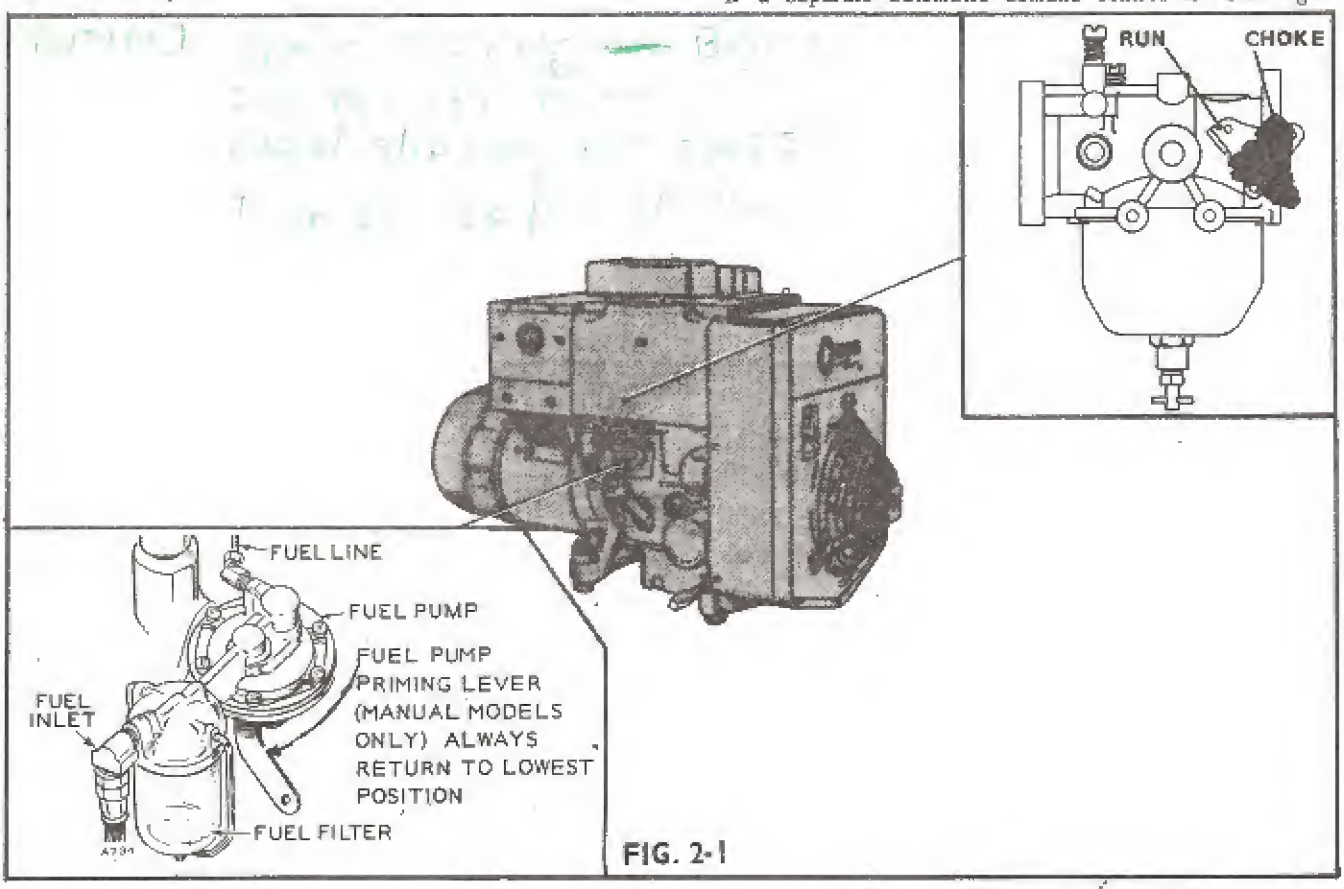


FIG. 2-1

* Cold soak-hard starting may be due to stiff rubber washer on point plunger-prevents points from

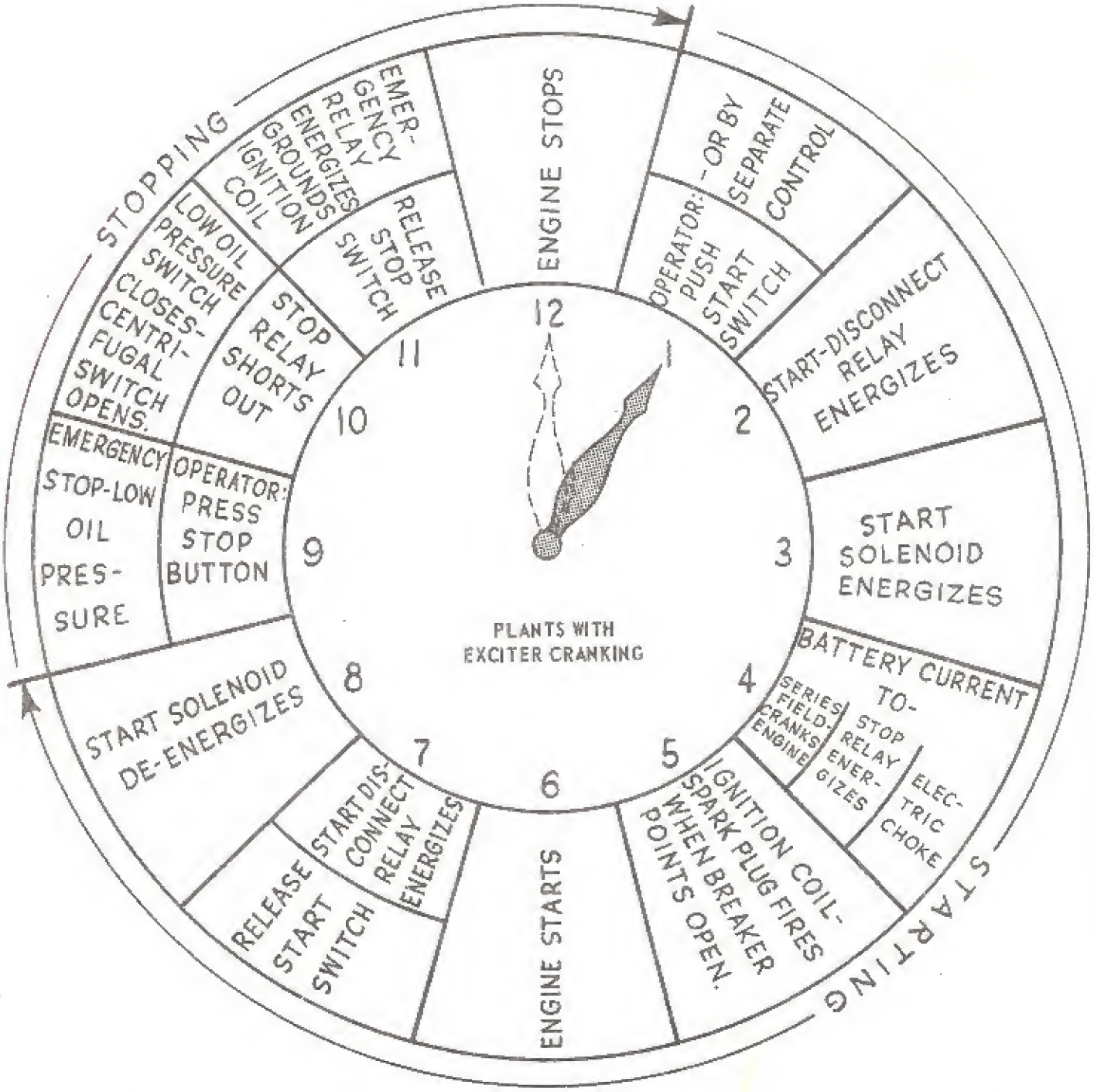


FIG. 2-2

stopping is used, adjust the charge rate for its maximum 4.5 amperes. This normally keeps battery charged even if starts occur as often as 15-minutes apart.

Leave *elec start-hand crank* switch at *elec start* position. This avoids battery discharge. **Exception:** While emergency hand-cranking, switch to *manual start* position, then return switch to *elec start* position after starting.

If a false start occurs with a starter motor equipped plant, make sure the centrifugal switch (Fig. 3-1) closes during speed build-up.

closing!. See fig 3-1 p. 13

Extremes in starting temperatures may require a slight electric choke adjustment. If engine fails to start quickly, rest engine several seconds before successive attempts to allow choke to cool and close.

STARTING (Manually Cranked Models) (Dry Carburetor)

Work fuel pump priming lever 15 strokes and return lever to down position (disengaged). Adjust carburetor manual choke as required by the starting temperature. Engage crank and pull upward quickly. Remove the crank immediately when plant starts. Open choke gradually until wide open. Oil pressure must be at least 20-pounds - if not, find the cause.

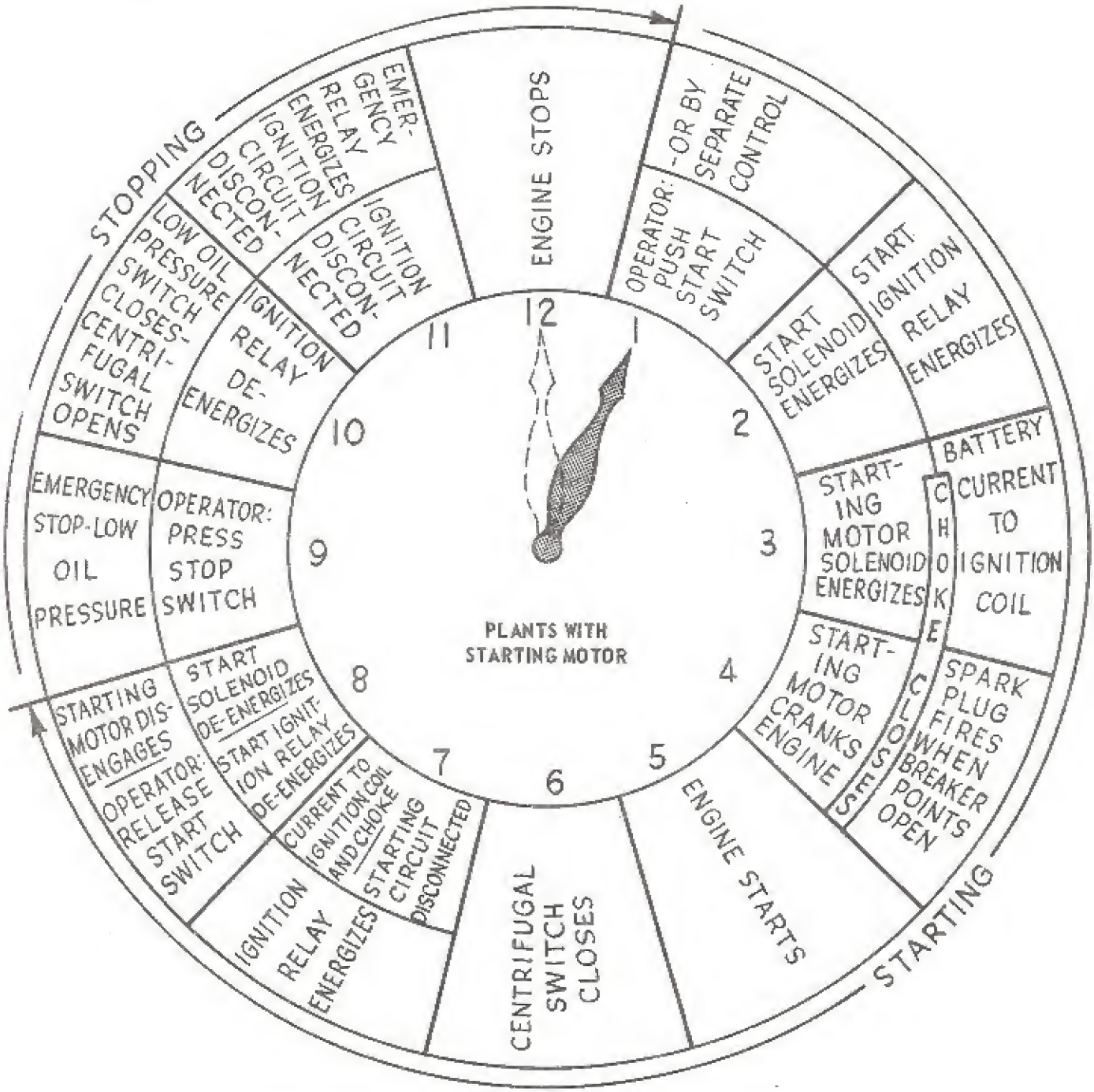


FIG. 2-3

STOPPING (Electrically Cranked Models)

(1) Push *start-stop* switch to *stop* position.

(2) Release switch when plant stops. If stop circuit fails, close fuel valve.

STOPPING (Manually Cranked Models)

Hold switch at *stop* position until engine stops.

APPLYING LOAD

If practicable, allow plant to warm up before connecting a heavy load. Continuous generator overloading may cause high operating temperatures that can damage the windings. The generator can safely handle an overload temporarily, but for normal operation, keep the load within name-plate rating.

Try to connect the load in steps instead of full load at one time. Most installations use a line switch that must be closed to connect a portion of the load.

EXERCISE STANDBY PLANTS

Infrequent use results in hard starting. Operate standby plants one 30-minute period each week. Run longer if battery needs charging.

EMERGENCY OPERATION IF BATTERY FAILS

The remote-type revolving-armature plant (60-cycle 6JB) must always have the battery connected while operating. High voltage will burn relays if battery is disconnected.

Remote type revolving field plants (705JB, 50-cycle 6JB) need a battery for electric choke and ignition. If the battery fails completely and the plant must be operated during an emergency, a battery can be shared with other equipment providing the plant charging circuit is disconnected as follows: (Prior to Spec. P) Remove the wire which connects to the battery reconnection block from the ammeter and tape the bore end. (Begin Spec. P) Remove the wire which connects to term #8 in the control panel from the ammeter and tape the bore end. With these leads disconnected the plant will not charge the battery.

BREAK-IN PROCEDURE

No matter how carefully engine parts are manufactured or expertly assembled, there are always microscopic variations in fit between metal parts such as pistons, rings, main and connecting rod bearings.

Break-in or ideal fitting of all internal moving metal parts can best be achieved by maintaining proper cooling and correct lubrication during the running-in period. *Break-in* can take as little as ten operating hours or it may take many hundreds of hours. Extended periods of very heavy engine loading (above rated horsepower or electrical output) during this initial service period can cause severe cylinder scoring or bearing galling. On the other hand extended periods of very light loading during initial break-in may cause cylinder wall glazing and/or poor piston ring seating. Engine parts damage can also be caused by using the wrong type and viscosity oil and high engine operating temperatures during break-in.

All engines use more oil than normal during the first hours of operation. As internal moving parts are run-in by controlled operation, oil consumption should gradually decrease until the rate of consumption is stabilized. It is extremely rare that oil consumption drops to zero. All engines use some oil even when in perfect condition and properly broken-in. Oil consumption varies according to engine design, engine (piston) speed, size of engine, type of oil, oil viscosity, length of operating periods, operating temperatures, engine loading, etc. As engine operation is continued, clearance between moving parts increase slightly due to normal wear of piston rings, cylinder walls, valve guides, oil seals, etc. These clearances increase until oil consumption is excessive and engine parts have to be replaced and/or refitted. This usually takes thousands of hours.

Each Onan engine is *run-in* at the Onan factory for a minimum of three hours. This is not enough running time to completely *break-in* the engine. Proper completion of the *break-in* period is up to the customer.

Generator sets manufactured by Onan can be loaded to full nameplate rated output (not until they *bog down*) as soon as they are put into operation. It is recommended during these first few hours of operation that generator sets be loaded as close to full rated capacity as possible. Initial heavy loading helps seat piston rings and brings oil consumption down to a normal level in the shortest time.

During *break-in* check oil level at least every eight (8) operational hours. Add oil if the level is at *low* on the dipstick. Never over-fill. This may cause oil to foam and enter the breather system.

Drain the initial oil fill after 50-hours of operation while the engine is hot.

Controlled *break-in* with consistent use of proper oil from a reputable supplier and a conscientiously applied maintenance program will help assure satisfactory service for thousands of hours from your Onan electric plant.

X-RAY (Special Model - Code 17/)

JB Models are suitable for use with full-wave X-Rays up to 50 MA, 100 KVP (or 40 MA, 125 KVP). Continuous dummy load not required to stabilize voltage.

Keep generating plant used to power X-Ray equipment in top condition at all times.

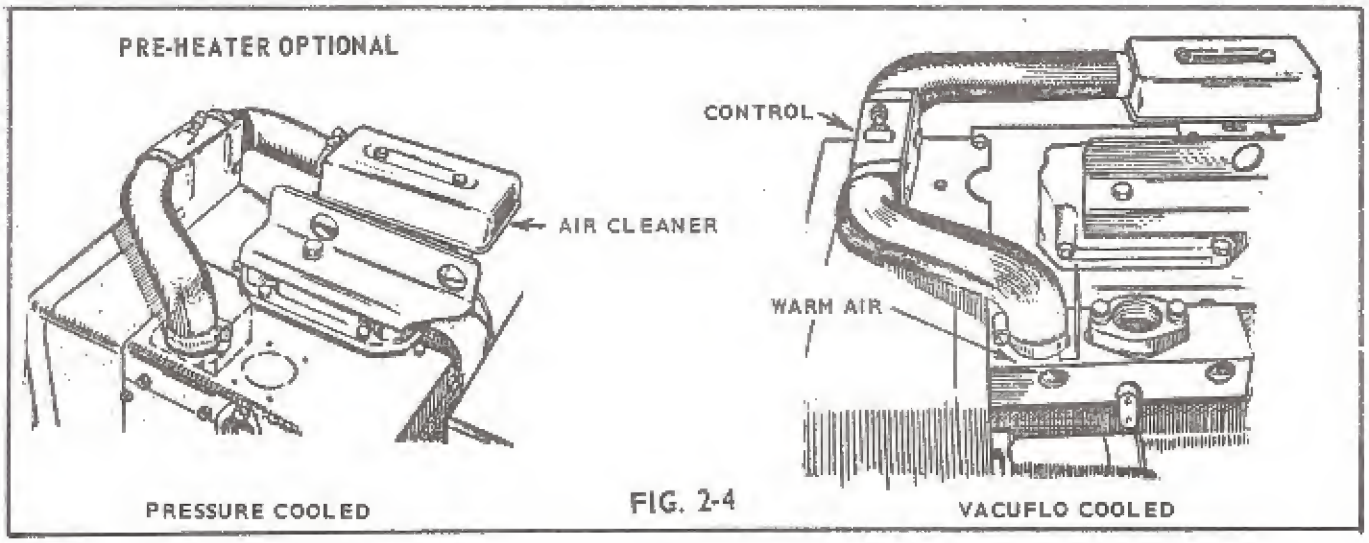


FIG. 2-4

Carburetor Air Pre-Heater conveys the engines discharged warm air to the carburetor to prevent carburetor icing. Heated air supplied to the air cleaner during cold weather prevents carburetor icing. The air source is automatically selected by the Vernatherm (thermostatic element) which operates a shutter in the induction air stream. The shutter is fully closed at 80°F (just touches bottom), is half open at 90°F, and is fully open to ambient air at 100°F.

OUT-OF-SERVICE PROTECTION

Protect a plant that is to be out-of-service for more than 30 days as follows:

1. Run plant until thoroughly warm.
2. Turn off fuel supply and run until plant stops.
3. Drain oil from oil base while still warm. Refill and attach a warning tag stating oil viscosity used.
4. Remove each spark plug. Pour 1 oz. (two tablespoons) of rust inhibitor (or SAE #50 oil) into each cylinder. Crank engine slowly (by hand) several times. Install spark plugs.
5. Service air cleaner.
6. Clean governor linkage and protect by wrapping with a clean cloth.
7. Plug exhaust outlet to prevent entrance of moisture, dirt, bugs, etc.
8. Wipe generator brushes, slip rings, etc. Do not apply lubricant or preservative.
9. Wipe entire unit. Coat rustable parts with a light film of grease or oil.
10. Provide a suitable cover for the entire unit.
11. Disconnect battery and follow standard battery storage procedure.

HIGH TEMPERATURES

1. See that nothing obstructs air flow to-and-from the plant.
2. Keep cooling fins clean. Air housing should be properly installed and undamaged.
3. Keep ignition timing properly adjusted.

LOW TEMPERATURES

1. Use correct SAE No. oil for temperature conditions. Change oil only when engine is warm. If an unexpected temperature drop causes an emergency move the plant to a warm location or apply heated air (never use open flame) externally until oil flows freely.
2. Use fresh (not *premium*) gasoline. Protect against moisture condensation. Below 0°F adjust carburetor main jet for slightly richer fuel mixture.
3. Keep ignition system clean, properly adjusted, and batteries in a well charged condition.
4. Partially restrict cool air flow but use care to avoid overheating.

DUST AND DIRT

1. Keep plant clean. Keep cooling fins free of dirt, etc.
2. Service air cleaner as frequently as necessary.
3. Change crankcase oil every 100 operating hours.
4. Keep oil and gasoline in dust-tight containers.
5. Keep governor linkage clean.
6. Clean generator brushes, slip rings, and commutator.

HIGH ALTITUDE

For operation at altitudes of 2500-feet above sea level, close carburetor main jet adjustment slightly to maintain proper air-to-fuel ratio (refer to the *Adjustments Section*). Maximum power will be reduced approximately 4% for each 1000-feet above sea level, after the first 1000-feet.

ADJUSTMENTS

CHECK BREAKER POINTS

Refer to Maintenance Schedule for correct gap distances. Replace burned or faulty points. If only slightly burned, dress smooth with file or fine stone. Measure gap with thickness gauge.

(1) The centrifugal switch, Fig. 3-1 is wide open when engine is stopped. Loosen and move stationary contact to correct gap.

(2) Ignition breaker points. Fig. 3-1 must be correctly gapped. Crank engine to fully open breaker points (1/4 turn after top center). Loosen and move stationary contact to correct the gap at full separation. Retighten contact and re-check gap.

Ignition points should break contact just when timing mark aligns for degree of spark advance (or retard) as specified in Maintenance Schedule. Final timing is corrected by properly rotating the breaker mechanism (plate, distributor, or magneto) at its mounting and using a timing light. If specified timing cannot be obtained by rotation of the breaker plate check to be sure timing marks on gears are aligned. Timing procedures appear in separate Service Manual.

CARBURETOR (Gasoline)

The carburetor (Fig. 3-2) has a fuel main (high speed) adjustment (needle A) and a fuel idle adjustment (needle B). A nylon rod extends down through the lower shroud span allowing easy access to the main adjustment needle. Early models have the main adjustment needle on the top of carburetor. The main adjustment (needle A) affects operation under heavy load conditions. Idle adjustment affects operation at light or no load. Under normal circumstances, factory carburetor adjustments should not be disturbed. If the adjustments have been disturbed, turn needles off their seats, 1 to 1-1/2 turns to permit starting, then re-adjust them for smooth operation. **Caution:** *Forcing the needle against its seat will damage it. The needle does not com-*

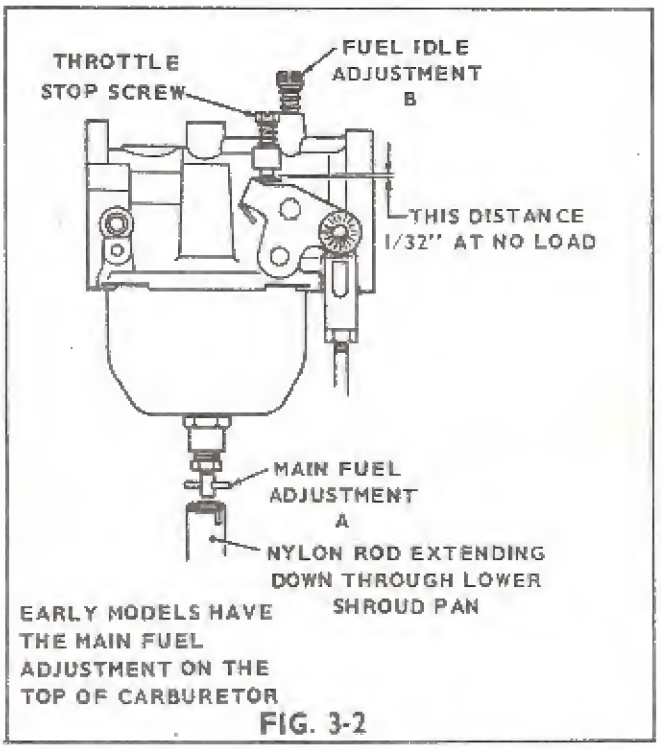


FIG. 3-2

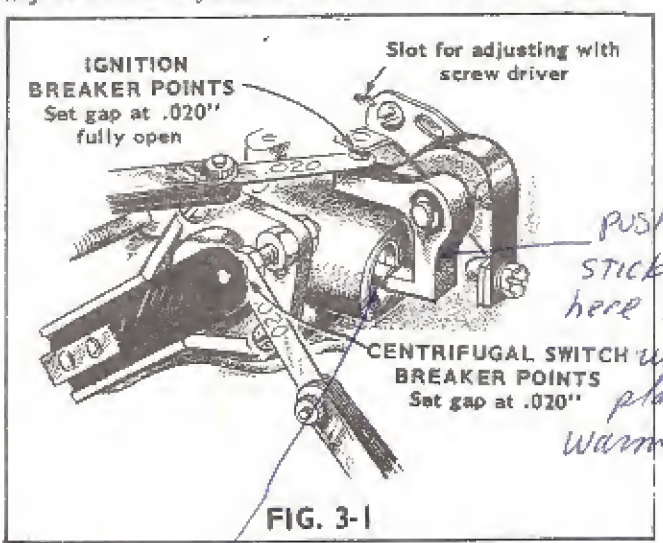


FIG. 3-1

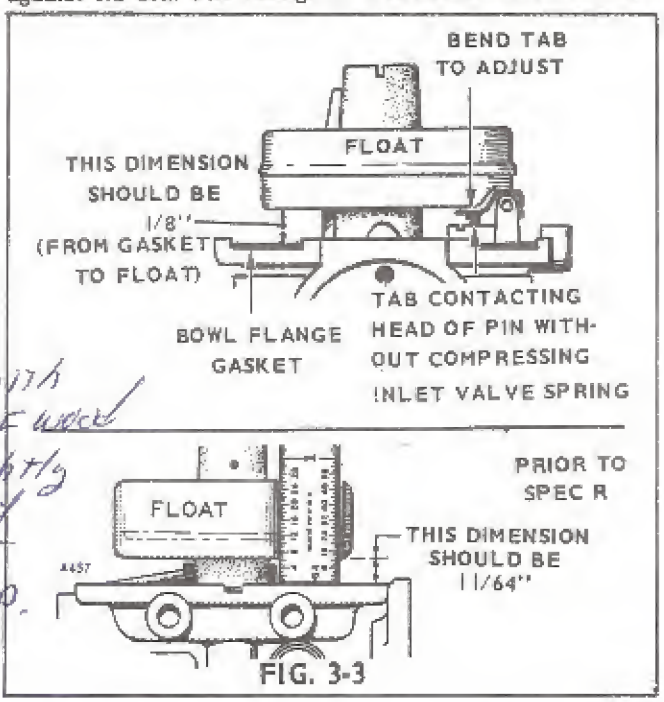


FIG. 3-3

push with stick of wood here lightly until plant warms up.

Rubber seal gets stiff in cold weather - points may not close

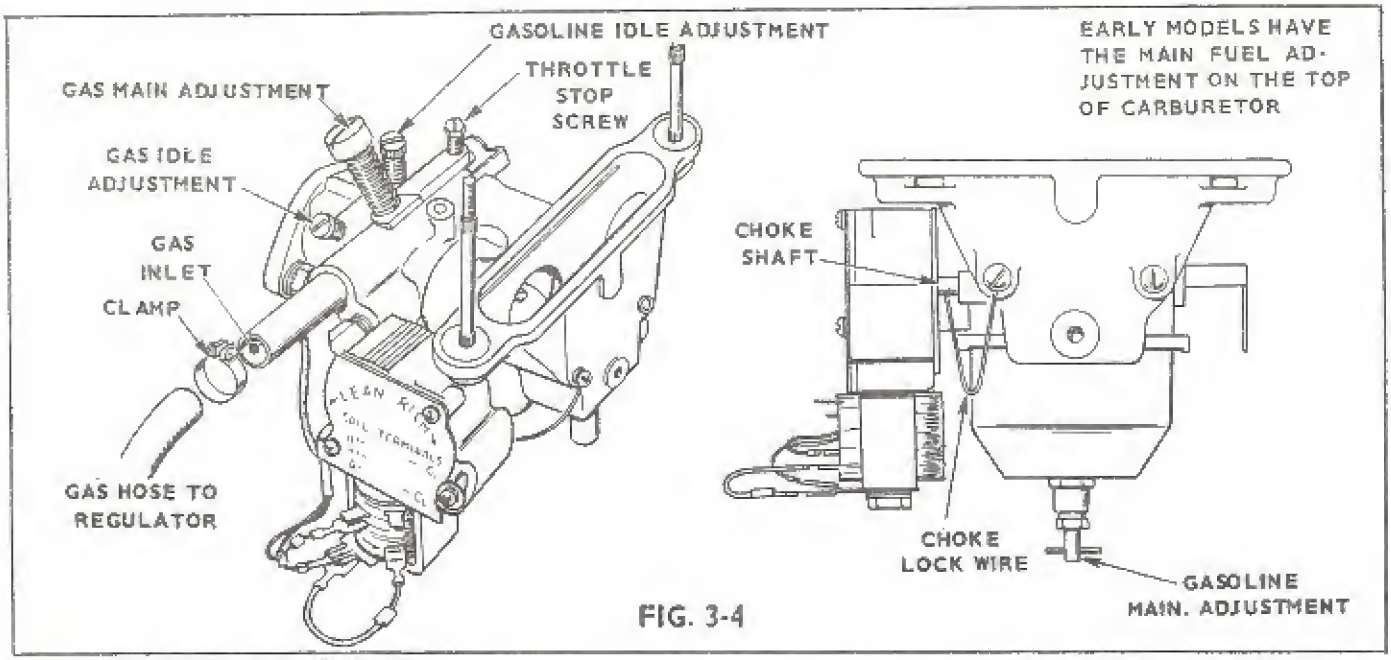


FIG. 3-4

pletely shut off when turned fully in.

Before final adjustment, allow engine to warm up. Make idle adjustment with no load connected to the generator. Use a tachometer (or connect a frequency meter) to generator output. Slowly turn idle adjustment out until engine speed (or generator frequency) drops slightly below normal. Then turn needle in until speed (or frequency) returns to normal.

To set fuel main adjustment, apply a full electrical load to the generator. Carefully turn main adjustment screw in until engine speed (or output frequency) drops slightly below normal. Then turn needle out until speed (or frequency) returns to normal. Proper carburetor adjustment cannot be assured unless the governor is properly adjusted.

To check float level, remove the entire main fuel adjustment assembly from the float bowl (unscrew large nut from float bowl - Fig. 3-2). The correct carburetor float is 1/8" (11/64" prior to Spec R) between the free end of the float and the carburetor body (See Fig. 3-3). Adjustment is made by bending the tab on the float. The float tab should just touch fuel inlet valve and not compress the inlet valve spring. NOTE: Do not apply excessive pressure to float valve.

CARBURETOR (Gas-Gasoline)

Gas carburetor adjustment procedure is the same as for gasoline. See Fig. 3-4 for location of adjusting needles.

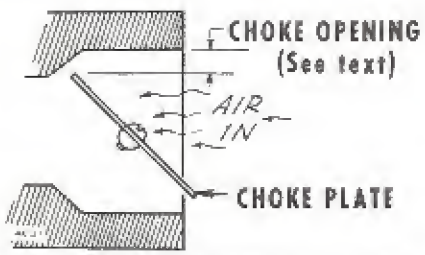
ONAN THERMO-MAGNETIC CHOKE

This choke uses a heating element and a heat sensitive bimetal spring to open the choke plate. The choke solenoid, actuated during engine cranking only, closes the choke plate according to ambient temperature. During gaseous fuel operation, the choke plate is locked in the full open position by the choke lock wire (Fig. 3-4).

If adjustment is required, use the following instructions. Choke bimetal spring must be at ambient temperature. Allow engine to cool at least one hour before setting. Adjust choke by turning the choke body, which engages a link connected to a bimetal choke spring. Remove air cleaner and adapter to expose the carburetor throat. Loosen the screw which secures the choke body. Rotate choke body clockwise to increase choke and counterclockwise to decrease choke action (leaner mixture). Refer to Fig. 3-5 below for correct choke setting according to ambient tem-

CHOKE OPENING FOR PLANTS PRIOR TO SPEC S

AMBIENT TEMP. (°F)	60	65	70	75	80	85	90	95	100
CHOKE OPENING (Inches)	1/8	9/64	5/32	11/64	3/16	13/64	7/32	15/64	1/4



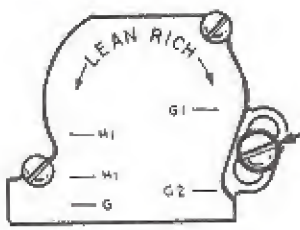


FIG. 3-5

CHOKE OPENING FOR PLANTS BEGINNING SPEC S

AMBIENT TEMP. (°F)	10	20	30	40	50	60	70	75
CHOKE OPENING (Inches)	1/4	5/16	11/32	3/8	7/16	15/32	1/2	9/16

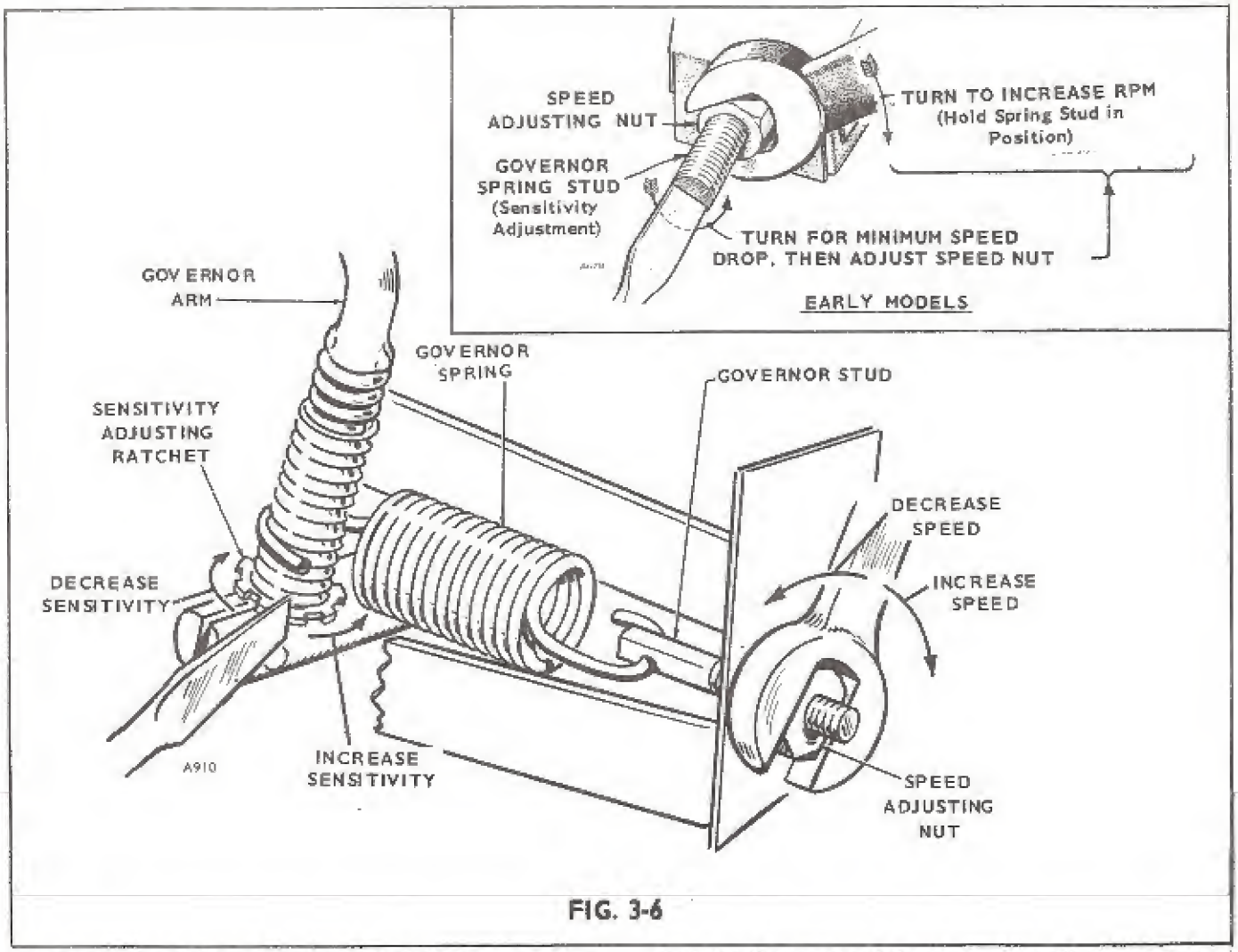


FIG. 3-6

perature. Use drill rod or shank of drill bit to measure choke opening (Fig. 3-5).

GOVERNOR

The governor controls engine speed. Rated speed and voltage appear on the nameplate (see also Specifications). Engine speed equals frequency multiplied by 30, on a 4-pole generator, thus 1800 rpm gives 60-cycle frequency. Preferred speed does not vary more than 3 cycles from no-load to full-load operation. Be sure throttle, linkage, and governor mechanism operate smoothly.

Changing spring tension (by turning the nut) changes engine speed (Fig. 3-6). More spring tension (turning nut clockwise) gives more rpm. Turn *nut* counterclockwise to reduce governed speed. Hold a tachometer against the stud in the generator axis. On revolving armature generators, adjust engine speed to attain proper voltage with load connected and using a voltmeter.

The sensitivity (no load to full load speed droop) is adjusted by turning the governor sensitivity adjusting ratchet nut, accessible through hole in side of blower housing. If speed drops too much when full load is applied, turn the ratchet nut (Fig. 3-6) counterclockwise to increase sensitivity. Too close a sensitivity adjustment approaching no speed drop when load is applied, will result in a hunting condition (increase and decrease in speed). After adjusting sensitivity, readjust speed, replace dot button in blower housing, and secure speed stud lock nut.

Change spring tension on early models by holding the governor spring stud and turning the nut. Sensitivity is adjusted by turning the governor spring stud (Fig. 3-6). Set throttle stop screw (located on carburetor throttle lever) with no load connected and while running at rated speed. Turn the screw to give 1-32" clearance between the screw and pin (Fig. 3-2).

CHARGE RATE

See *Starting* in Operation Section.

VALVE CLEARANCE

Check valve clearance when the engine is at room temperature (about 70°F).

1. Turn the flywheel until the cylinder which is to have its valve adjusted is on its compression stroke. On engines without a hand crank use a socket wrench on the flywheel screw hex head.

   To determine if the cylinder is in its compression stroke, observe the action of the push rods as the engine is rotated in a clockwise direction. The exhaust valve push rod will be in its lowest position

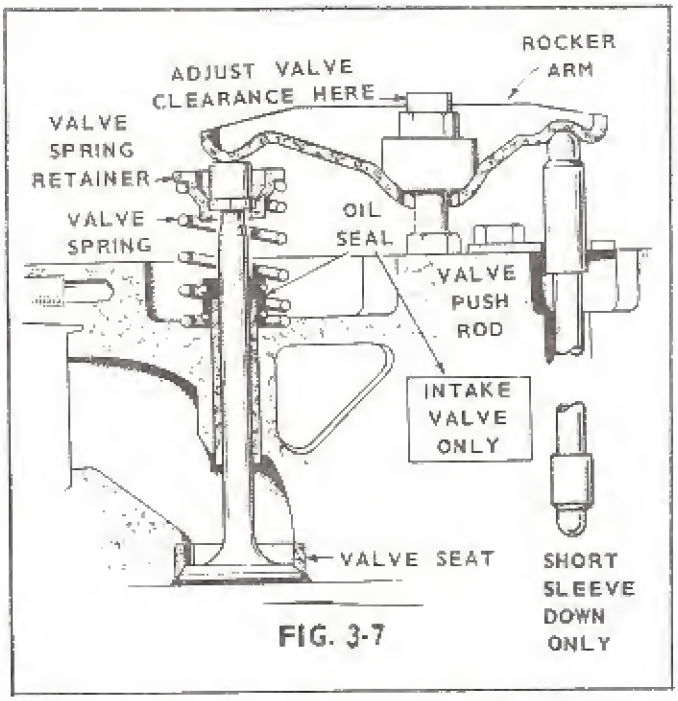


FIG. 3-7

and the intake valve push rod will be moving downward. As the piston reaches top dead center, the flywheel timing mark should be aligned with the timing pointer and the valve push rods stationary.

2. Turn the flywheel clockwise for an additional 10- to 45-degrees. There is no timing mark for this position so it must be estimated. With the piston located in this position, it will be in its power stroke with both valves completely closed.

3. Check cylinder head-bolt torque prior to valve clearance adjustment. Torque should be 28 to 30 foot-pounds. Valve clearance is adjusted with the locknut which secures rocker arm to the cylinder head (see Fig. 3-7).

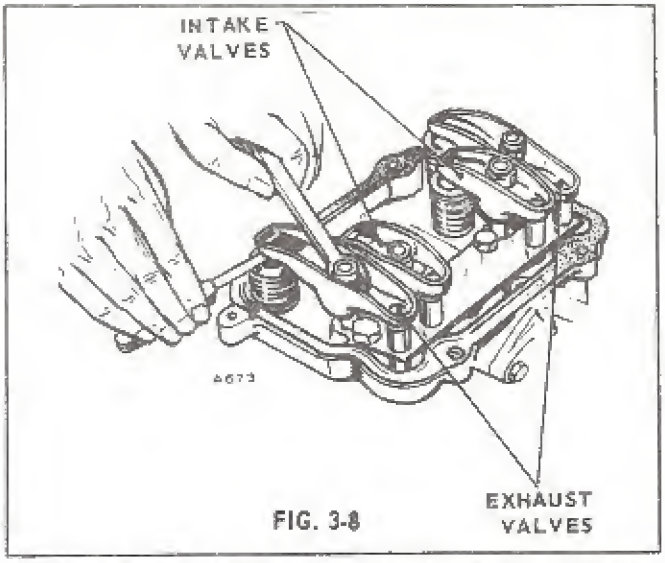


FIG. 3-8

Loosen the locknut to increase clearance and tighten to reduce clearance.

4. Using a feeler gauge, check the clearance between the rocker arm and the valve (see Fig. 3-8). Increase or decrease the clearance until the proper gap is established. Valve clearances are given in the Maintenance Section.

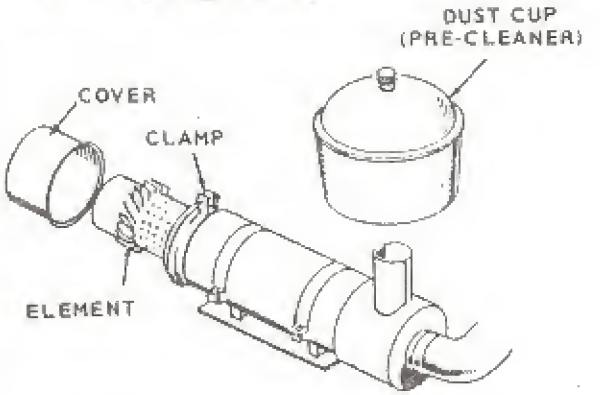
5. Always adjust the valve clearances in the firing order (1-2) sequence. After positioning #1 cylinder, adjust the valve clearance according to steps 3 and 4. Refer to Maintenance Section for correct valve clearance.

6. To adjust the valve clearance of #2 cylinder, turn the flywheel in a clockwise direction 360-degrees from the position used when timing #1 cylinder. The flywheel position should be between 10- and 45-degrees past the BC(bottom center) flywheel mark. **Important:** *Early model engines do not have a BC mark on the flywheel.*

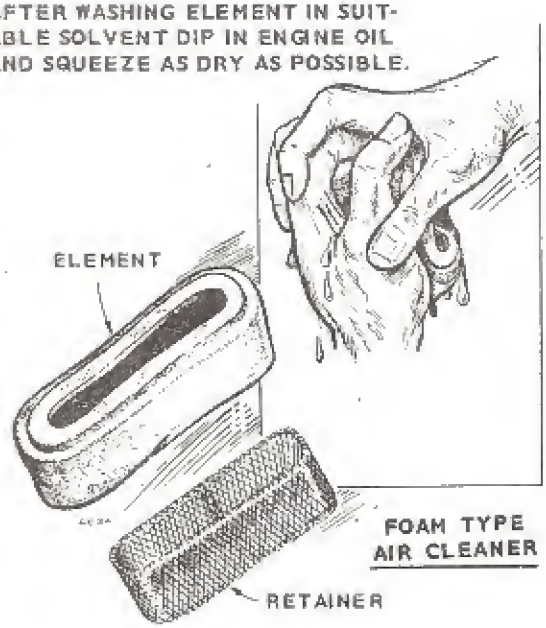
7. After positioning #2 cylinder, adjust the valve clearance according to steps 3 and 4.

PERFORM ALL MAINTENANCE DETAILS AS SPECIFIED IN THE MAINTENANCE SCHEDULE

DRY TYPE AIR CLEANER



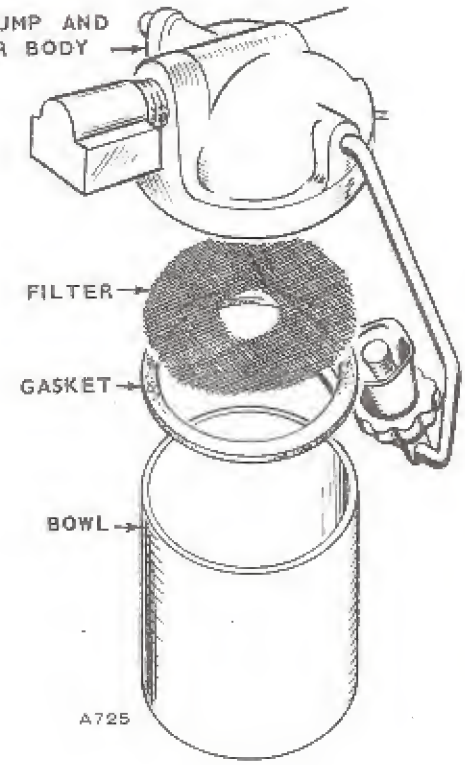
AFTER WASHING ELEMENT IN SUITABLE SOLVENT DIP IN ENGINE OIL AND SQUEEZE AS DRY AS POSSIBLE.



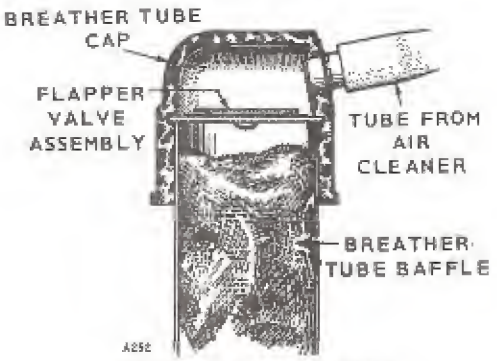
FOAM TYPE AIR CLEANER

OIL BATH AIR CLEANER

FUEL FILTER

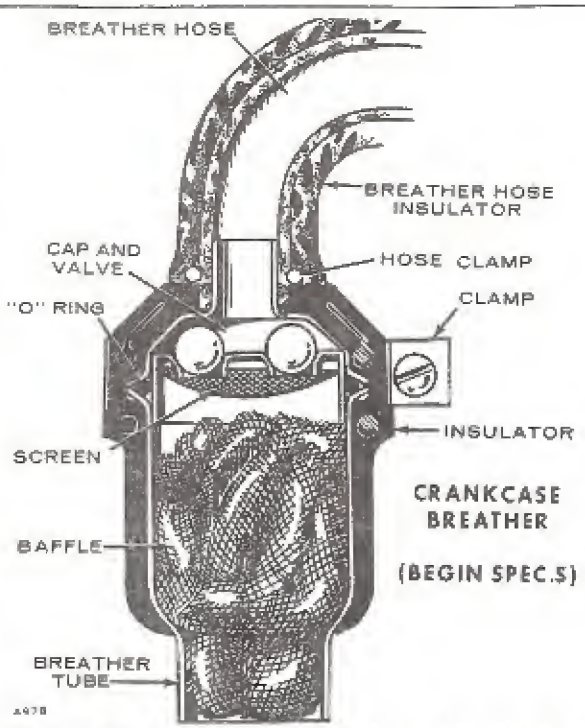


TO SPEC S



CRANKCASE BREATHER

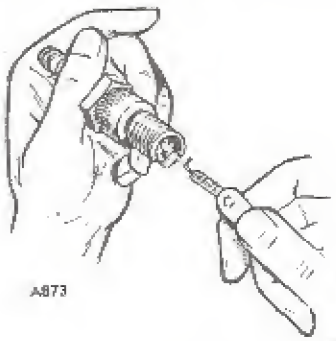
Remove breather cap. Remove valve from cap. Wash valve in suitable solvent. Dry and install with perforated disc toward engine. If faulty, install new valve.



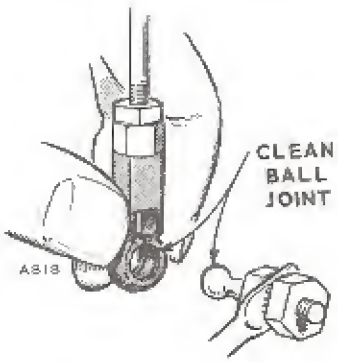
CRANKCASE BREATHER

(BEGIN SPEC.S)

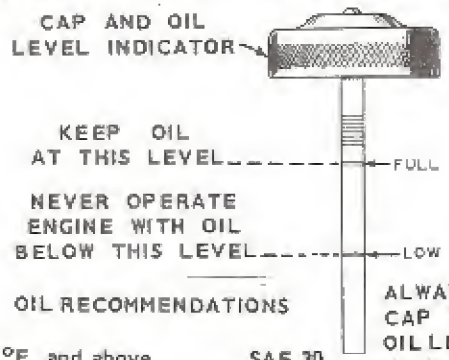
Remove hose clamp,breather hose,breather cap clamp and insulator halves to release breather cap and valve assembly. Wash cap and valve assembly and the baffle in suitable solvent and reinstall.



SPARK PLUG GAP
0.025" GASOLINE
0.018" GAS FUEL



CLEAN BALL JOINT



ALWAYS REPLACE CAP TIGHTLY, OR OIL LEAKAGE MAY OCCUR.

OIL RECOMMENDATIONS

30°F. and above	SAE 30
30°F. and below	SAE 5W-20

Do not use service DS oil. Do not mix brands or grades.

OIL FILTER CHANGE
(See Schedule)

Place pan under old filter and remove by screwing counter-clockwise. Clean filter mounting area. Install new filter; oil filter gasket and screw filter on clockwise until gasket touches mounting base, then tighten 1/2 turn.

ROUTINE CHECK CHART

Before generator set is put in operation, check all components for mechanical security. If any abnormal condition, defective part, or operating difficulty is detected, repair or service as required. The generator set should be kept free of dust, dirt, and spilled oil or fuel. Be sure proper operating procedure is followed.

GENERATOR SET ROUTINE CHECK CHART

WHAT TO CHECK	HOW TO CHECK	PRECAUTIONS
Engine oil	Check level (should be at full mark on oil indicator)	Add oil as necessary to bring level to full mark.
Engine Fuel	Check level in tank.	See that fuel line is properly connected.
Engine ventilation	Check ventilating openings.	Remove any obstructions.
Connecting cables	Check for proper connections. Check for physical damage.	Tighten connections. Replace damage connectors.
Battery	Check electrolyte level.	Keep level above plates. Add only approved water as necessary.

MAINTENANCE SCHEDULE

Use this factory recommended maintenance (based on favorable operating conditions) to serve as a guide to get long and efficient plant life. Neglecting routine maintenance can result in failure or permanent damage to the plant.

Maintenance is divided into two categories: (1) OPERATOR MAINTENANCE – performed by the operator, and (2) CRITICAL MAINTENANCE – performed by qualified service personnel.

OPERATOR MAINTENANCE SCHEDULE

MAINTENANCE ITEMS	OPERATIONAL HOURS			
	8	50	100	200
Inspect Plant	x			
Check Fuel	x			
Check Oil Level	x			
Check Air Cleaner		x1		
Clean Governor Linkage			x1	
Check Spark Plug			x	
Change Crankcase Oil			x1	
Clean Crankcase Breather				x
Clean Fuel System				x
Check Battery				x
Replace Oil Filter				x1

x1 - Perform more often in extremely dusty conditions.

For any abnormalities in operation, unusual noises from engine or generator, loss of power, overheating, etc., contact your ONAN dealer.

CRITICAL MAINTENANCE SCHEDULE

MAINTENANCE ITEMS	OPERATIONAL HOURS			
	200	500	1000	5000
Check Breaker Points	x			
Clean Commutator and Collector Rings	x1			
Check Brushes	x2			
Remove Carbon & Lead		x		
Check Valve Clearance	*	x		
Clean Carburetor		x		
Clean Generator			x	
Remove & Clean Oil Base			x	
Grind Valves (If required)			x	
Clean Rocker Box Oil Line Holes			x	
General Overhaul (If required)				x

x1 - Perform more often in extremely dusty conditions.
x2 - Replace revolving field collector ring brushes when worn to 5/16" or less – Replace all other brushes when worn to 5/8" or less
* - Tighten head bolts and adjust valve clearance after first 50 hours on a new or overhauled engine.

BOLT TORQUES		FT-LB
Spark Plugs		25-30
Cylinder Head		28-30
Oil Base Mounting		45-50
Spark Plug Gap		0.025"
Tappets	(Intake & Exhaust)	
Gasoline	0.012"	0.015"
Gas & Gas Gasoline	0.013"	0.020"

Magneto Pole Shoe Air Gap	0.020"
Ignition Breaker Points Gap	0.020"
Centrifugal Switch Point Gap	0.020"
Ignition Timing (Running) Gas Fuel	35° BTC
Ignition Timing (Stopped) Gas Fuel	5° BTC
Ignition Timing (Running) Gasoline	25° BTC
Ignition Timing (Stopped) Gasoline	5° ATC

MAINTENANCE DIAGNOSIS

POSSIBLE CAUSE	REMEDY
ENGINE WILL NOT CRANK	
Battery discharged.	Recharge.
Loose connections.	Tighten connections.
Defective starting circuit.	Repair or replace as necessary.
Defective starting motor on revolving field generator.	Repair or replace as necessary
Defective switch.	Replace.
ENGINE CRANKS TOO STIFFLY	
Too heavy oil in crankcase.	Drain, refill with lighter oil.
ENGINE WILL NOT START WHEN CRANKED	
Lack of fuel or faulty carburetion.	Refill tank. Check fuel system. Clean, adjust, as necessary.
Clogged fuel screen.	Clean.
Cylinders flooded.	Crank few times with spark plugs removed.
Poor fuel.	Drain, fill with fresh fuel.
Poor compression.	Tighten spark plugs.
Wrong breaker point gap.	Reset breaker points.
ENGINE STOPS WHEN START SWITCH IS RELEASED	
Centrifugal switch remained open (units with revolving field generator).	Clean and adjust.
EXCESSIVE OIL CONSUMPTION, LIGHT BLUE SMOKY EXHAUST	
Oil leaks from oil base or connections. This does not cause smoky exhaust.	Replace gaskets. Tighten screws and connection. Check breather valve.
Oil too light or diluted.	Drain, refill with correct oil.
Engine misfiring.	Clean, adjust, or replace spark plugs.
Faulty ignition.	Clean, adjust, or replace spark plugs.
Too much oil.	Drain excess oil.
ENGINE RACES	
Governor not controlling carburetor.	Check governor performance & linkage condition.

POSSIBLE CAUSE	REMEDY
BLACK, SMOKY EXHAUST, EXCESSIVE FUEL CONSUMPTION, FOULING OF SPARK PLUG WITH SOOT, POSSIBLE LACK OF POWER UNDER HEAVY LOAD	
Fuel mixture too rich.	Adjust carburetor or choke. Install needed carburetor parts.
Choke not open.	Inspect linkage and setting.
Dirty air cleaner.	Clean.
Excessive crankcase pressure, causing excessive fuel pump pressure.	Clean breather valve.
ENGINE STOPS UNEXPECTEDLY	
Fuel tank empty.	Fill with fresh fuel.
Defective ignition.	Check ignition system.
SHARP METALLIC THUD, ESPECIALLY WHEN COLD ENGINE FIRST STARTED	
Low oil supply.	Add oil.
Oil badly diluted.	Change oil.
PINGING SOUND WHEN ENGINE IS SUDDENLY OR HEAVILY LOADED	
Wrong spark plug.	Install correct spark plug.
Spark plug burned or carboned.	Install new plug.
Fuel stale or low octane.	Use good, fresh fuel.
Lean fuel mixture.	Clean & adjust carburetor.
LIGHT POUNDING KNOCK	
Low oil supply.	Add oil.
Oil badly diluted.	Change oil.
ENGINE MISFIRES AT LIGHT LOAD	
Spark plug gap too narrow.	Adjust to correct gap.
Intake air leak.	Tighten or replace manifold and carburetor gaskets.
Faulty ignition.	Clean, adjust or replace spark plugs.
Low compression.	Tighten cylinder head and spark plugs.

POSSIBLE CAUSE	REMEDY
ENGINE MISFIRES AT HEAVY LOAD	
Spark plug gap too wide.	Adjust gap.
Faulty ignition.	Clean, adjust or replace spark plugs.
Clogged carburetor.	Clean jet and adjust carb.
Clogged fuel screen.	Clean
ENGINE BACKFIRES	
Lean fuel mixture.	Clean or adjust carburetor.
Poor fuel.	Refill with good, fresh fuel.
LOW OIL PRESSURE	
Defective gage.	Replace.
Oil too light or diluted from leaking fuel pump diaphragm.	Drain. Refill with proper oil. Repair or replace fuel pump.
Oil too low.	Add oil.
Sludge on oil cup screen.	Clean screen & oil sump.
Badly worn oil pump.	Replace.
HIGH OIL PRESSURE	
Defective gage.	Replace.
Oil too heavy grade.	Drain. Refill.
Clogged oil passages.	Clean all lines & passages.
Oil relief valve stuck.	Clean by-pass. Replace if needed.
ENGINE OVERHEATING	
Poor air circulation.	Maintain supply.
Improper lubrication.	See Low Oil Pressure.
Fuel mixture too lean.	Adjust carburetor.

POSSIBLE CAUSE	REMEDY
Generator overloaded.	Reduce load.
VOLTAGE LOW AT FAR END OF LINE BUT NORMAL NEAR POWER PLANT	
Too small line wire for load and distance.	Install larger or extra wires or reduce load.
ELECTRIC MOTOR RUNS TOO SLOWLY AND OVERHEATS AT FAR END OF LINE BUT OK IF USED NEAR POWER UNIT	
Too small line wire for load and distance.	Install larger or extra wires or reduce load.
VOLTAGE UNSTEADY BUT ENGINE NOT MISFIRING	
Speed too low.	Adjust governor to correct speed.
Loose connections.	Tighten connections.
Fluctuating load.	Correct any abnormal load condition causing trouble.
GENERATOR OVERHEATING (Approximately 160°F higher than ambient)	
Overloaded.	Reduce load.
VOLTAGE DROPS UNDER HEAVY LOAD	
Engine lacks power.	See remedies for engine misfires under heavy load.
Poor compression.	Tighten cylinder head & spark plugs.
Faulty carburetion.	Clean the fuel system. Clean, adjust or replace parts necessary.
Dirty air cleaner.	Clean.
Restricted exhaust line.	Clean or increase the size.
Choke partially closed.	See that it opens fully.
Shorted field rectifier in Static Exciter	Check with ohm meter

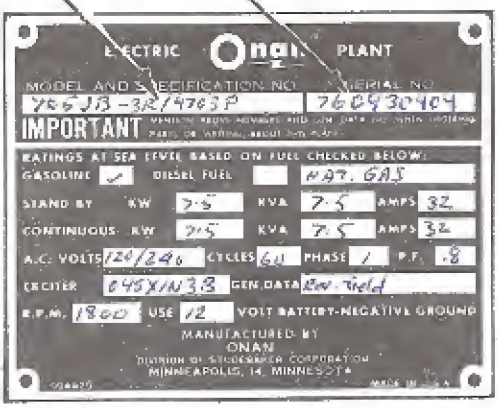
INSTRUCTIONS FOR ORDERING REPAIR PARTS

For parts or service, contact the dealer from whom you purchased this equipment or refer to your Nearest Authorized Parts & Service Center.

To avoid errors or delay in filling your parts order, please furnish all information requested.

Always refer to the nameplate on your plant:

1. Always give the MODEL & SPEC. NO. and SERIAL NO.



Built June 1966
Use: Summus only
1966, 67, 68, 69

For handy reference, insert YOUR plant nameplate information in the spaces above.

2. Do not order by reference number or group number, always use part number and description.

3. Give the part number, description and quantity needed of each item. If an older part cannot be identified, return the part prepaid to your dealer or nearest AUTHORIZED SERVICE STATION. Print your name and address plainly on the package. Write a letter to the same address stating the reason for returning the part.

4. State definite shipping instructions. Any claim for loss or damage to your unit in transit should be filed promptly against the transportation company making the delivery. Shipments are complete unless the packing list indicates items are back ordered.

Prices are purposely omitted from this Parts Catalog due to the confusion resulting from fluctuating costs, import duties, sales taxes, exchange rates, etc.

For current parts prices consult your Onan Dealer, Distributor, or Parts and Service Center.

"En esta lista de partes los precios se omiten de proposito, ya que bastante confusion resulto de fluctuaciones de los precios, derechos aduanales, impuestos de venta, cambios extranjeros etc.

Consiga los precios vigentes de su distribuidor de productos "ONAN".

PARTS CATALOG

This catalog applies to the standard JB Plants as listed below. Parts are arranged in groups of related items. Each illustrated part is identified by a reference number corresponding to the same reference number below the illustration. Parts illustrations are typical. Using the MODEL and SPEC NO. from the plant nameplate, select the Parts Key No. (1, 2, etc. in the last column) that applies to your plant Model and Spec No. This Parts Key No. represents parts that differ between models. Unless otherwise mentioned in the description, parts are interchangeable between models. Right and left plant sides are determined by FACING the engine end (front) of the plant.

PLANT DATA TABLE

* MODEL & SPEC		ELECTRICAL DATA					PARTS
		WATTS	VOLTS	CYCLE	WIRE	PHASE	KEY NO.
5JB-1M/		5000	120	60	2	1	1
5JB-3M/		5000	120/240	60	3	1	1
6JB-1M/		6000***	120	60	2	1	1
6JB-3M/		6000***	120/240	60	3	1	1
4JB-52R/	4JB-52RV/****	4000	240	50	2	1	2
4JB-57R/	4JB-57RV/****	4000	220/380	50	4	3	2
5JB-52R/,	5JB-52RV/****	5000***	240	50	2	1	2
5JB-57R/,	5JB-57RV/****	5000***	220/380	50	4	3	2
5JB-1R/,	5JB-1RV/****	5000	120	60	2	1	2
5JB-3R/,	5JB-3RV/****	5000	120/240	60	3	1	2
5JB-3CR/,	5JB-3CRV/****	5000	120/240	60	**	1	2
6JB-1R/,	6JB-1RV/****	6000***	120	60	2	1	2
6JB-2R/,	6JB-2RV/****	6000***	240	60	2	1	2
6JB-3R/,	6JB-3RV/****	6000***	120/240	60	3	1	2
6JB-3CR/,	6JB-3CRV/****	6000***	120/240	60	**	1	2
6JB-4R/,	6JB-4RV/****	6000***	120/208	60	4	3	2
6JB-5R/,	6JB-5RV/****	6000***	240	60	3	3	2
601JB-51R/,	601JB-51RV/****	6100	120	50	2	1	3
601JB-52R/,	601JB-52RV/****	6100	240	50	2	1	3
601JB-53R/,	601JB-53RV/****	6100	120/240	50	3	1	3
601JB-54R/,	601JB-54RV/****	6100	120/208	50	4	3	3
601JB-55R/,	601JB-55RV/****	6100	240	50	3	3	3
601JB-57R/,	601JB-57RV/****	6100	220/380	50	4	3	3
706JB-1R/,	706JB-1RV/****	7600	120	60	2	1	3
706JB-2R/,	706JB-2RV/****	7600	240	60	2	1	3
706JB-3R/,	706JB-3RV/****	7600	120/240	60	3	1	3
706JB-4R/,	706JB-4RV/****	7600	120/208	60	2	1	3
706JB-5R/,	706JB-5RV/****	7600	240	60	3	3	3
	706JB-1RV6000/****	7600	120	60	2	1	3
	706JB-2RV6000/****	7600	240	60	2	1	3
	706JB-3RV6000/****	7600	120/240	60	3	1	3
6JB-53R/,	6JB-53RV/****	6000	120/240	50	**	1	4
6JB-54R/,	6JB-54RV/****	6000	120/208	50	4	3	4
6JB-55DR/,	6JB-55DRV/****	6000	120/240	50	4	3	4
6JB-57R/,	6JB-57RV/****	6000	220/380	50	4	3	4
705JB-3R/,	705JB-3RV/****	7500	120/240	60	**	1	4
705JB-4R/,	705JB-4RV/****	7500	120/208	60	4	3	4
705JB-4XR/,	705JB-4XRV/****	7500	277/480	60	4	3	4
705JB-5DR/,	705JB-5DRV/****	7500	120/240	60	4	3	4
705JB-9XR/,	705JB-9XRV/****	7500	347/600	60	3	3	4
	705JB-3RV6000/****	7500	120/240	60	**	1	4
6JB-53R17/*****,		6000	120/240	50	**	1	5
705JB-3R17/*****,		7500	120/240	60	**	1	5

* - The Specification Letter Advances (A to B, B to C, etc.) with manufacturing changes.

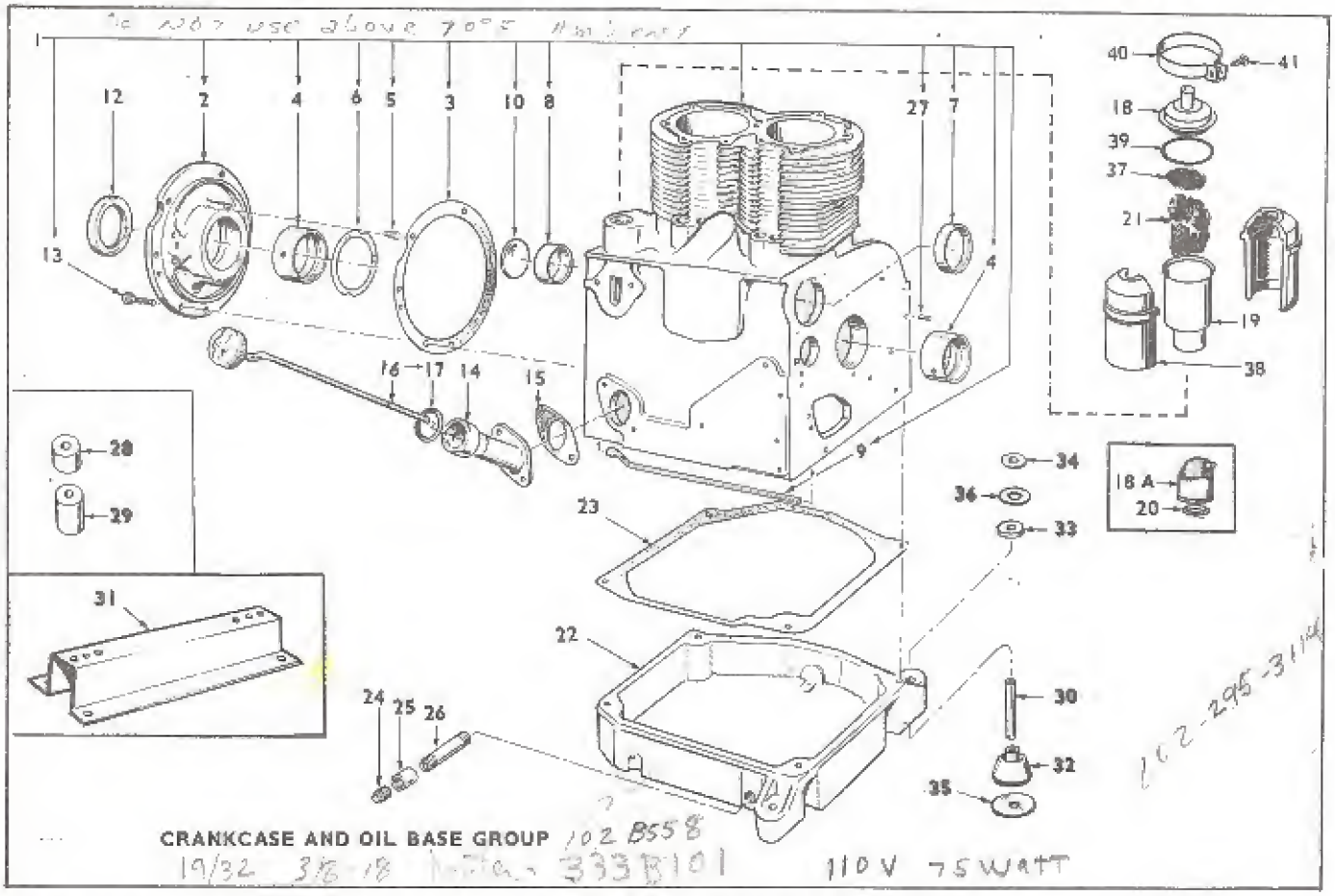
** - Plant is reconnectible for 120-volt 2-wire, 240-volt 2-wire or 120/240-volt 3-wire service.

*** - Maximum standby rating, continuous rating is also shown on name plate.

**** - These plants have Vacu-Flo type cooling (V appears in model).

***** - X-RAY Models with special generator, (alternator and exciter portions).

use SW-20 oil SCRATCH or P. Pth.



CRANKCASE AND OIL BASE GROUP 102B558

19/32 3/8-16 Metric 333B101 110V 75WATT

102-295-3114

REF. NO.	PARTS NO.	QTY. USED	PARTS DESCRIPTION
1	110A1324	1	Block Assy., Cylinder, Incl. Bearings
2	101D337	1	Plate, Brg., (Less Brg. & Pins)
3	101K386	1	Gasket Kit, Brg. Plate (Incl. Steel Shims)
4	101B359	2	Bearing, Prec. Frt. or Rr., Specify: Std., or .002", .010", .020", .030" Under.
5	516A72	4	Pin, Thrust Washer
6	104B420	2	Washer, Crankshaft Thrust
7	101B363	1	Bearing, Precision Cam Frt, Std. Only
8	101B365	1	Bearing, Precision Cam Rear, Std. Only
9	120A553	1	Tube, Crankcase Oil
10	517-53	1	Plug, Camshaft Opening
12	509-86	1	Seal, Oil Brg. plate
13	805-19	6	Bolt, Place, Plt., 3/8-16 x 1-1/4"
14	123A649	1	Tube, Oil Fill
15	123A667	1	Gasket
16	123A651	1	Cap and Indicator
17	123A191	1	Gasket, Cap
18	123A954	1	Cap & Valve, Breather - Begin Spec S
18A	CAP, BREATHER		
	123A458	1	To Spec G
	123A787	1	Spec G through R
19	TUBE, BREATHER		
	123A645	1	To Spec S
	123A952	1	Begin Spec S
20	123A315	1	Valve, Breather - To Spec S
21	123A865	1	Baffle, Breather
22	BASE, OIL		
	102D450	1	To Spec H
	102D540	1	Begin Spec H

REF. NO.	PARTS NO.	QTY. USED	PARTS DESCRIPTION
23	102B451	1	Gasket, Base
24	505-56	1	Plug, (½")
25	505-14	1	Coupling, (½")
26	505-2	1	Nipple, (½" x 3")
27	516A141	2	Pin, Dowel, Gr. Cover Locating
28	402A36	4	Mount, Vibration, Cylindrical Shaped, Upper, To Spec H
29	402A276	4	Mount, Vibration, Cylindrical Shaped, Lower, To Spec H
30	BUSHING, SPACER - VIBRATION MOUNT		
	402A46	4	To Spec H
	402A290	4	Begin Spec H
31	SUPPORT, VACU-FLO COOLED PLTS.		
	403B648	2	To Spec H
	403B710	2	Begin Spec H
32	CUSHION, VIBRATION, CONE SHAPED . BEGIN SPEC H		
	402B284	2	Eng. End
	402B285	2	Gen. End, Key 4, 5
	402B286	2	Gen. End, Key 1, 2, 3
33	402A282	4	Snubber, Shock Mtg. - Begin Spec H
34	526-14	4	Washer, (29/64" I.D. x 1-½" O.D. x 1/8") Only with Cone Shaped Cush.
35	526A195	4	Washer, (29/64" I.D. x 3-¼" O.D. x 1/8") Only with Cone Shaped Cush.
36	526A198	As Req.	Washer, (5/8" I.D. x 1-½" O.D. x 1/16") Only with Cone Shaped Cush.
37	123A958	1	Screen, Breather - Begin Spec S
38	123A998	2	Insulator (Half), Breather - Begin Spec S
39	509-117	1	Seal, "O" Ring - Breather - Begin Spec S
40	518P268	1	Clamp, Breather Insulator - Begin Spec S
41	809-35	1	Screw, Breather Clamp - Begin Spec S

Onan Minn, Minn 612-786-6332 Don Johnson - Spires

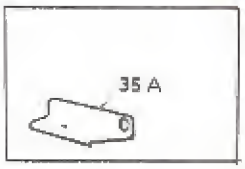
Keith Weinberg / Chuck Babcock (Succ Mgr 1st #'s)

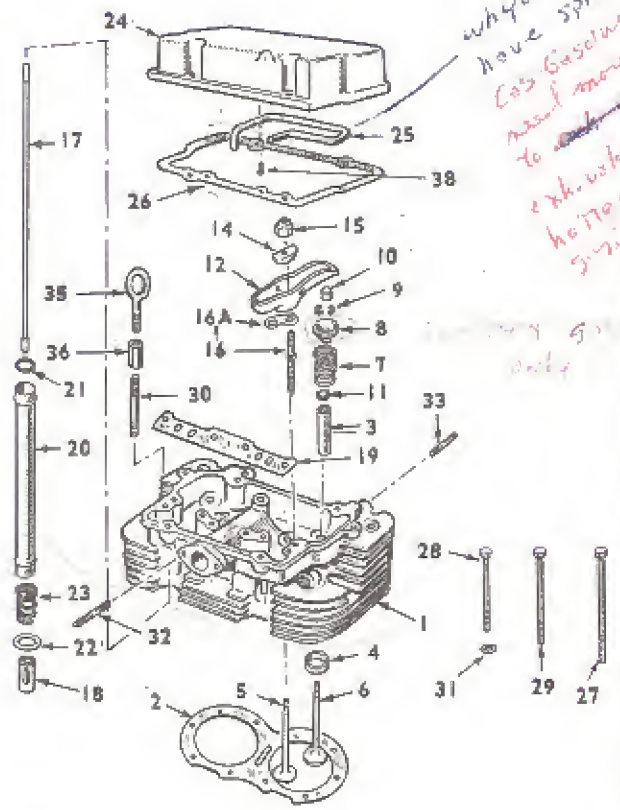
Valve rotators for gasoline units
ball brgs under item 8

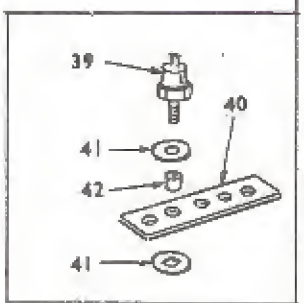
CYLINDER HEAD, VALVE AND ROCKER GROUP

Marvel Inverse oiler for LP use to lub valve guides.

REF. NO.	PARTS NO.	QTY. USED	PARTS DESCRIPTION
1	HEAD, CYLINDER		
	110A1439	1	Gasoline Plants
	110B1440	1	Gas & Gas-Gasoline Plants
2	110B1223	1	Gasket, Head
3	GUIDE, VALVE		
	110A1501	4	Intake & Exhaust, Gasoline Plts.
	110A1501	2	Intake, Gas & Gas-Gasoline Plts.
	110A1392	2	Exhaust, Gas & Gas-Gasoline Plts.
4	INSERT, VALVE SEAT - SPECIFY: STD. OR .002", .005", .010", .025" OVERSIZE		
	110A1214	2	Intake, Gasoline Plants
	110A1287	2	Intake, Stellite, Gas & Gas-Gasoline Plants
	110A1215	2	Exhaust only 1
5	VALVE, INTAKE		
	110B1218	2	Gasoline Plants
	110B1286	2	Gas & Gas-Gasoline Plants
6	110B1219	2	Valve, Exhaust, Stellite — only 1
7	110A1221	4	Spring, Valve
8	110B1220	4	Retainer, Valve Spring
9	110A858	8	Lock, Valve Spring Retainer
10	110A859	4	Cap, Valve Stem
11	509A90	2	Seal, Oil - Intake Valve, Incl. Ret. Rgs.
12	ARM ROCKER		
	115B128	2	Exhaust
	115B129	2	Intake
14	115B127	4	Ball, Rocker Arm
15	115B150	4	Locknut, Rocker Arm
16	115A189	4	Stud, Rocker Arm (2 Studs & Lock)
16A	115A184	2	Lock, Stud
17	115A145	4	Rod, Valve Push (Aluminum)
18	TAPPET, VALVE		
	115A132	4	To Spec P
	115A185	4	Begin Spec P
19	115B142	1	Guide, Push Rod
20	115A137	4	Shield, Push Rod
21	509-84	8	Seal, Push Rod Shield
22	115A155	8	Washer, Spring Retaining
23	115A146	4	Spring, Shield Retainer
24	COVER, ROCKER		
	115D164	1	Gasoline Plants (Less Oil Line)
	115C173	1	Gas & Gas-Gasoline Plants (with Oil Line)
25	120B628	1	Line, Oil, Rocker Cover, Gasoline Plants Only
26	115B130	1	Gasket, Rocker Cover
27	110A1225	5	Screw, (3/8-16 x 4-3/4") Cyl. Hd.
28	110A815	4	Screw, (3/8-16 x 2") Cyl. Hd.
29	110A1282	2	Screw, (3/8-16 x 4") Cyl. Hd.
30	520A626	1	Stud, Cyl. Hd. (Only with Eyebolt and Extension Nut)
31	526-174	7	Washer, Cylinder Head
32	520A526	2	Stud, Carburetor
33	520A608	4	Stud, Exhaust Manifold
35		1	Bolt, Lifting (Order 403K707)
35A	403K707	1	Bracket, Lifting - Includes Hdw.
36	110A1304	1	Nut, Extension (Only on Models with Lifting Eye)
38	809-42	1	Screw, Oil Line, Rocker Cover
39	309P196	1	Switch, High Air Temperature (Optional)
40	309A195	1	Bracket, High Air Temp. Switch (Optional)
41	508A126	2	Washer, Insulator, Switch Mounting (Optional)
42	508A127	1	Insulator, Sleeving - Air Temp. Switch (Optional)







Wright Grinding
103 Brookline Ave Camb.
491-1330
crankshafts only

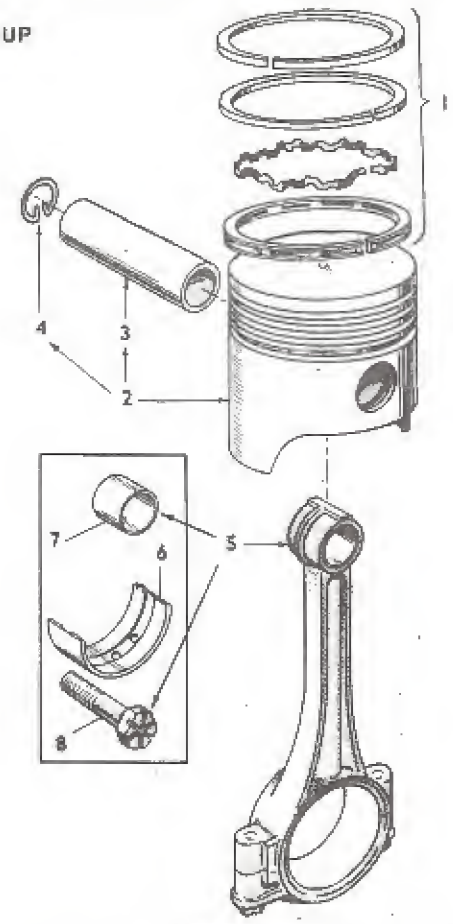
Boll Massachusetts Motive Parts for

MOTIVE PARTS - Hyde Park 361-7500

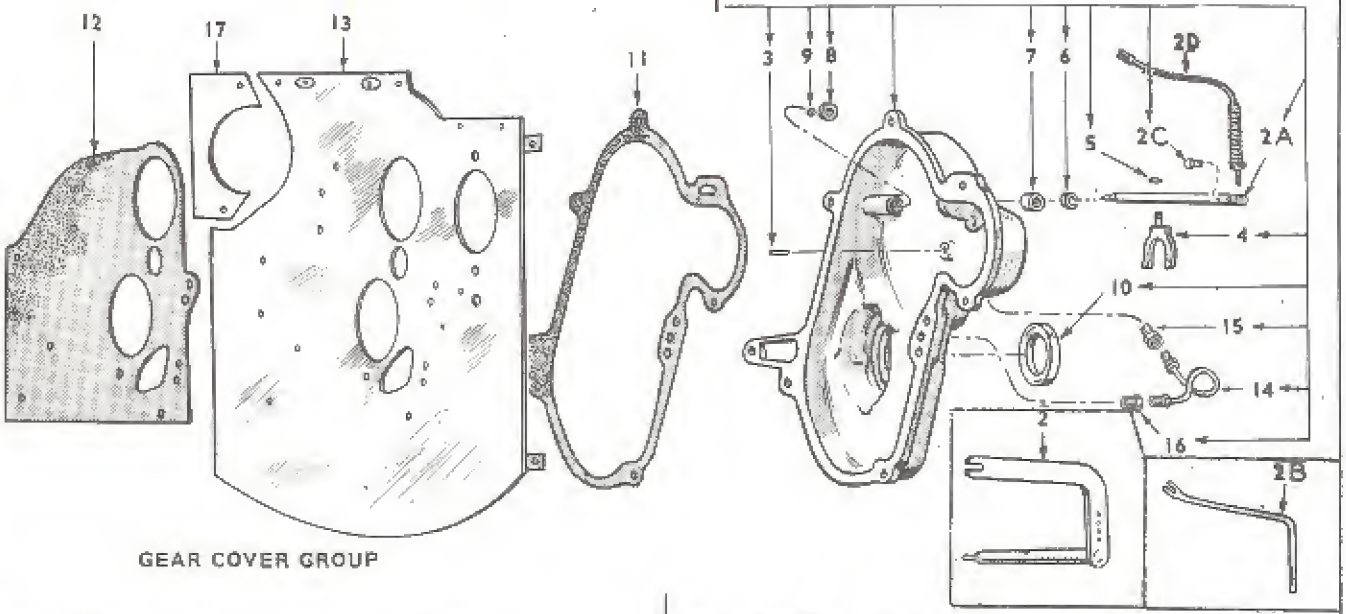
1 exh. valve
2 exh. valve guides "bronze" P/N 110A1392

11 Reed 25

PISTON AND CONNECTING ROD GROUP



REF. NO.	PART NO.	QTY. USED	PARTS DESCRIPTION
1	RING SET, SPECIFY: STD. OR .010", .020", .030" OVER.		
	113-89	2	All Spec S
	113-89	2	Gasoline and Gas-Gasoline - Begin Begin Spec S
	113-107	2	Gas only and LPG - Begin Spec S
2	PISTON & PIN - INCLS. PIN RETAINING RINGS -SPECIFY: STD. OR .010", .020", .030" OVER.		
	112-92	2	All To Spec S
	112-92	2	Gasoline and Gas-Gasoline - Begin Spec S
	112A106	2	Gas only and LPG – Begin Spec S
3	112A86	2	Pin, Specify: Std. or .002" Over.
4	112A85	4	Ring, Retaining, Pin
5	114C163	2	Rod Assy., Connecting (Forged)
6	114B164	4	Bearing Half, Connecting Rod - Specify: Std. or .002", .010" .020", .030" Under.
7	114A166	2	Bushing, Piston Pin, Connecting Rod, Semi - Finished
8	805A12	4	Bolt, (5/16-24 x 1-13/16")



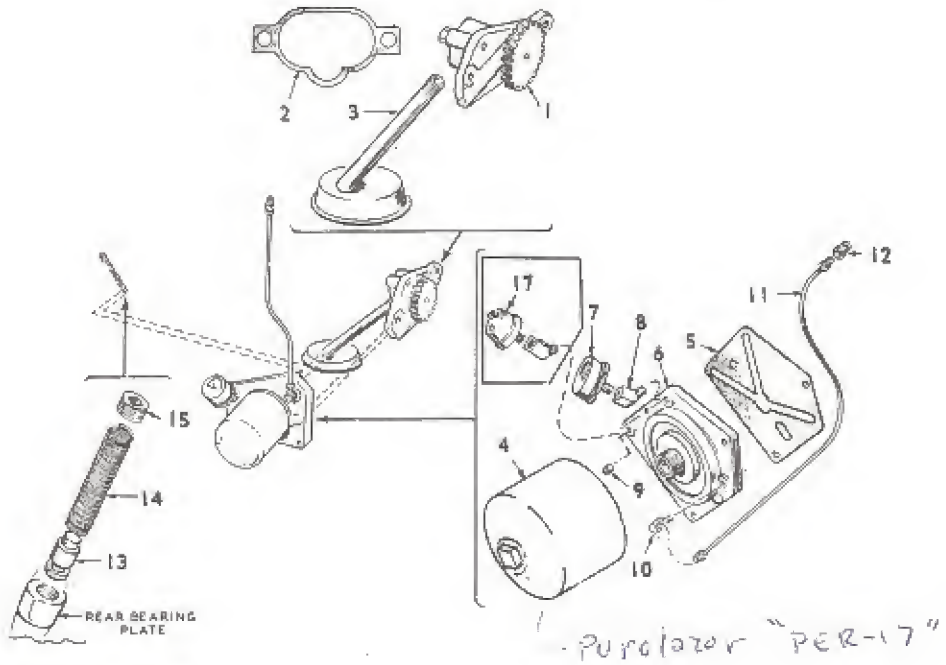
GEAR COVER GROUP

REF. NO.	PARTS NO.	QTY. USED	PARTS DESCRIPTION
1	COVER ASSEMBLY, GEAR, COMPLETE		
	103C277	1	To Serial 692236 (To Replace 103C235 Also Order 150B840 Arm & 103B251 Gasket)
	103C277	1	Begin Serial 692236 Through Spec D (To Replace 103C241, Also Order 103B251 Gasket)
	103C277	1	Begin Spec E
2	150B785	1	Arm & Shaft To Serial 692236, Order 150B838 Shaft, 150B840 Arm
2A	150B838	1	*Shaft, Governor, Begin Serial 692236
2B	150B840	1	Arm, Governor, Serial 692236 to 36 Spec R
2C	B15-176	1	*Screw, #8-32 x 1/2" Begin Serial 692236
2D	150B1093	1	Arm, Governor - Begin Spec R

REF. NO.	PARTS NO.	QTY. USED	PARTS DESCRIPTION
3	516-111	1	*Pin, Roll - Governor Cup Stop
4	150A777	1	*Yoke, Governor
5	518-129	1	*Ring, Yoke
6	509-88	1	*Seal, Oil
7	510P48	1	*Bearing, 1/2", Governor Shaft
8	510P82	1	*Bearing, 1/4", Governor Shaft
9	*BALL, BEARING - GOVERNOR SHAFT THRUST		
	510-14	1	To Spec E (3/16")
	510-43	1	Begin Spec E (5/16")
10	509-87	1	*Seal, Oil
11	GASKET, GEAR COVER		
	103C219	1	To Spec E (Iron Cover)
	103B251	1	Begin Spec E (Die Cast Cover)

REF. NO.	PARTS NO.	QTY. USED	PARTS DESCRIPTION
12	103C218	1	Gasket, Backplate
13	BACKPLATE		
	103D226	1	Key 1, 2, 3
	103D271	1	Key 4, 5 (To Replace 103D220 used on early models, also order 134B1532)
14	120A581	1	Line, Cover (Early Models Only)
15	502A235	1	Connector, Restricted, Oil Line (Early Models Only)
16	502-30	1	Connector, Inverted Male, Oil Line (Early Models Only)
17	134B1532	1	Baffle, Backplate

* - Included in Gear Cover Assembly.

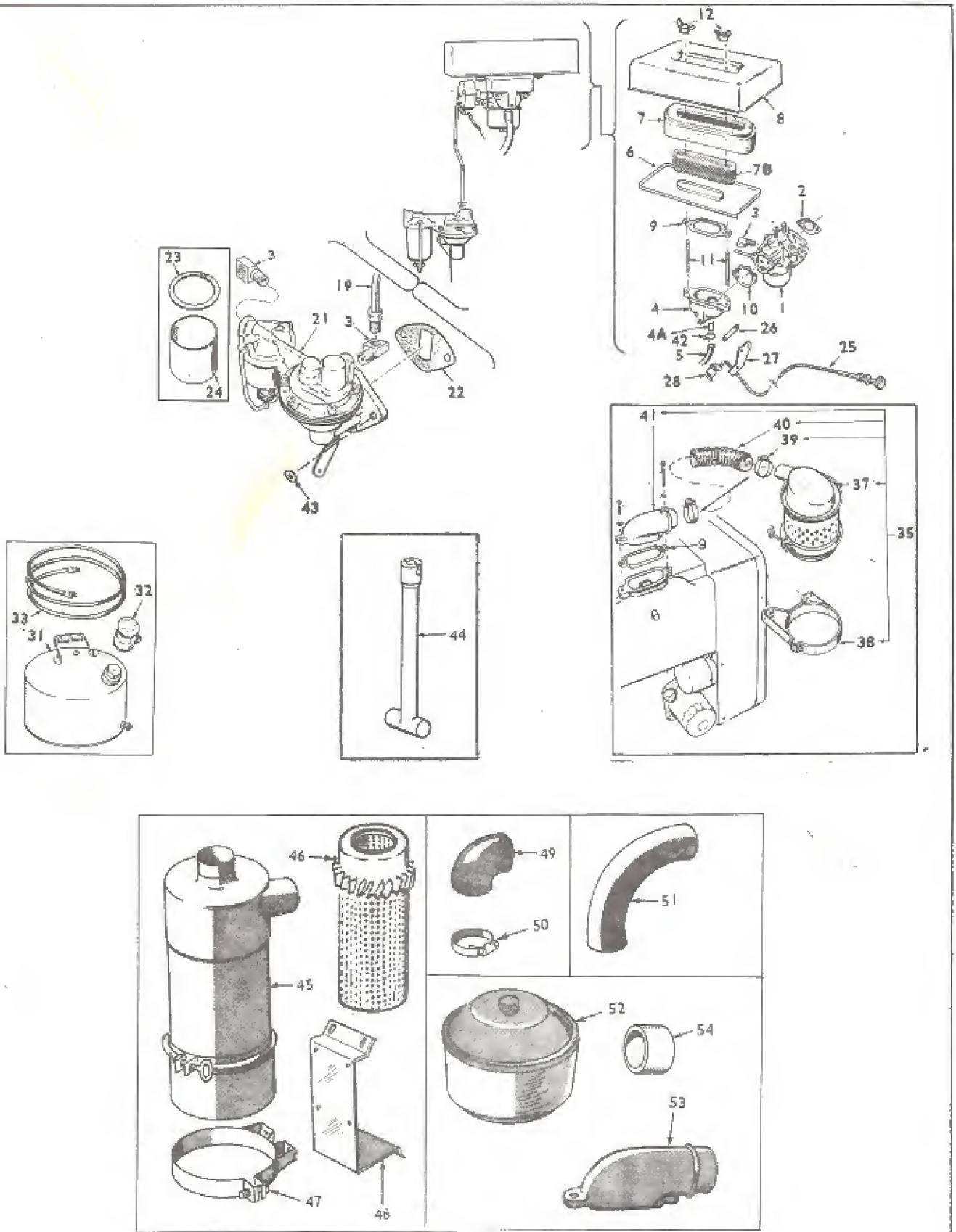


Purolator "PER-17"

OIL SYSTEM GROUP

REF. NO.	PARTS NO.	QTY. USED	PARTS DESCRIPTION
1	120A547	1	Pump Assembly, Oil
2	120K580	1	Gasket Kit, Pump
3	120A551	1	Cup, Oil Intake
4	122A185	1	Filter - Spec 17 Purolator
5	122A188	1	Gasket, Adapter
6	122A182	1	Adapter, Oil Filter
7	193P6	1	Gage, Oil Pressure
8	502A53	1	Elbow, Street 45° Oil Gage (Also (1) Optional Low Oil Pressure Switch)
9	505-57	1	Plug, 1/8", Adapter
10	ELBOW, INVERTED MALE, LINE TO ADAPTER		
	502-19	1	Gasoline Plants - To Spec P
	502-37	1	Gasoline plants - Begin Spec P
	502-19	1	Gas & Gas-Gasoline Plts. To Serial 698178
	502-37	1	Gas & Gas-Gasoline Plts., Begin Serial 698178

REF. NO.	PARTS NO.	QTY. USED	PARTS DESCRIPTION
11	LINE, ADAPTER TO CYLINDER HEAD		
	120A562	1	Gasoline Plants - To Spec P
	120A672	1	Gasoline plants - Begin Spec. P
	120A562	1	Gas & Gas-Gasoline Plts., To Serial 698178
	120A623	1	Gas & Gas-Gasoline Plts., Begin Serial 698178
12	CONNECTOR, RESTRICTED, LINE TO CYL. HEAD		
	502A235	1	Gasoline Plants - To Spec P
	502A274	1	Gasoline Plants - Begin Spec P
	502A235	1	Gas & Gas-Gasoline Plts., To Serial 698178
	502A274	1	Gas & Gas-Gasoline Plts., Begin Serial 698178
13	120A539	1	Valve, Oil By-Pass
14	120A555	1	Spring, By-Pass Valve
15	505-274	1	Plug, 1/8" Oil By-Pass
17	SWITCH, LOW PRESSURE (OPTIONAL)		
	309B64	1	To Spec F
	309A169	1	Begin Spec F



FUEL SYSTEM GROUP (GASOLINE)

REF. NO.	PARTS NO.	QTY. USED	PARTS DESCRIPTION
1	**CARBURETOR		
	141K763	1	Key 1 to Spec R
	141D693	1	Key 1, Begin Spec R
	141K762	1	Key 2, 3, 4, 5 to Spec R
	141D692	1	Key 2, 3, 4, 5, Begin Spec R
2	141A281	1	Gasket, Carburetor
3	ELBOW		
	502-2	2	Fuel Pump In. & Outlet
	502-65	1	Carb. Inlet
4	ADAPTER, AIR CLEANER (Incl. Nylon Tube)		
	140A647	1	To Spec R
	140A933	1	Begin Spec R
4A	123A732	1	Tube, Nylon
5	HOSE, BREATHER TO ADAPTER		
	503A384	1	To Spec G
	503A395	1	Spec G through R
	503A543	1	Begin Spec S
5A	503A558	1	Insulator, Breather Hose - Begin Spec S
6	140C595	1	Pan, Air Cleaner
7	140B640	1	Element, Air Cleaner
7B	140B641	1	Retainer, Air Cleaner Element
8	140C594	1	Cover, Air Cleaner
9	140A584	1	Gasket, Air Cleaner
10	GASKET, ADAPTER TO CARBURETOR		
	140A585	1	To Spec R
	140A921	1	Begin Spec R
11	520A621	2	Stud, Air Cleaner
12	865-20	2	Nut, Air Cleaner - Self Locking
19	LINE, FUEL PUMP TO CARBURETOR		
	159A739	1	To Spec R
	149A1095	1	Begin Spec R
21	PUMP, FUEL		
	149C805	1	Key 1
	149C803	1	Key 2, 3, 4, 5
22	149A792	1	Gasket, Fuel Pump
23	149P517	1	Gasket, Fuel Pump Bowl
24	149-116	1	Bowl, Fuel Pump
25	153B328	1	Choke, Man., Key 1
26	153A326	1	Arm, Man. Choke, Key 1
27	153A327	1	Bracket, Man. Choke, Key 1

REF. NO.	PARTS NO.	QTY. USED	PARTS DESCRIPTION
28	518P176	1	Clip, Choke Cable, Key 1
31	415A126	1	Tank, Fuel, 5 Gallon
32	415B124	1	Cap, Rain, Fuel Tank
33	501A81	1	Line, Tank to Pump (Flex.)
35	140K677	1	Conversion Kit, Oil Bath Air Cleaner, OPTIONAL
37	140B500	1	*Cleaner, Air Oil Bath
38	140B519	1	*Band
39	503P365	2	*Clamp, Hose
40	503A444	1	*Hose, Air Cleaner
41	140C645	1	*Adapter, Oil Bath Air Cleaner
42	503A171	2	Clamp, Breather Hose
43	526-65	1	Washer, Copper - Fl. pump Mtg.
44	141A727	1	Rod, Carb. Adjusting
45	140P721	1	Cleaner, Air, Incl. Element - Mobile Application
46	140P765	1	Element Only, Air Clnr. - Mobile Application
47	140P722	2	Band, Air Clnr. Mtg. - Mobile Application
48	140B720	1	Bracket, Air Cleaner - Mobile Application
49	503P419	1	Elbow, Air Clnr., Rubber - Mobile Application
50	503P365	4	Clamp, Hose, Air Clnr. - Mobile Application
51	140B741	1	Tube, Air Induction - Mobile Application
52	140P723	1	Pre-Cleaner, Air Clnr., Plastic - Mobile Application
53	140C645	1	Adapter, Air Clnr. Hose - Mobile Application
54	503A396	1	Hose, Air Clnr. Connector - Mobile Application
	149P1048	1	Repair Kit, Fuel Pump (Includes Diaphragm Assy., Valves & Gaskets) - Repl - 149K875

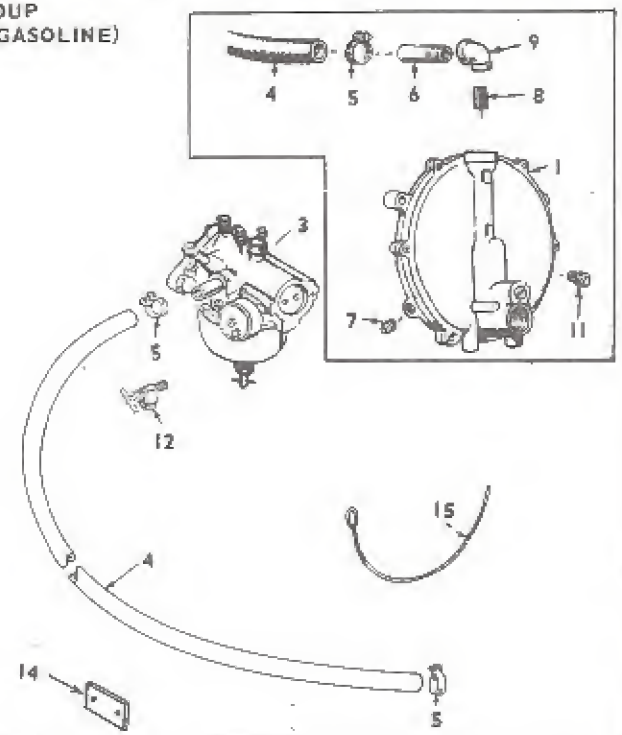
** - See separate group for components and service kits.

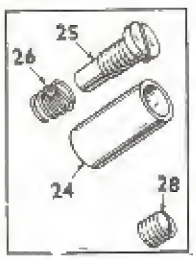
* - Included in OPTIONAL #140K677 Oil Bath Air Cleaner Conversion Kit.

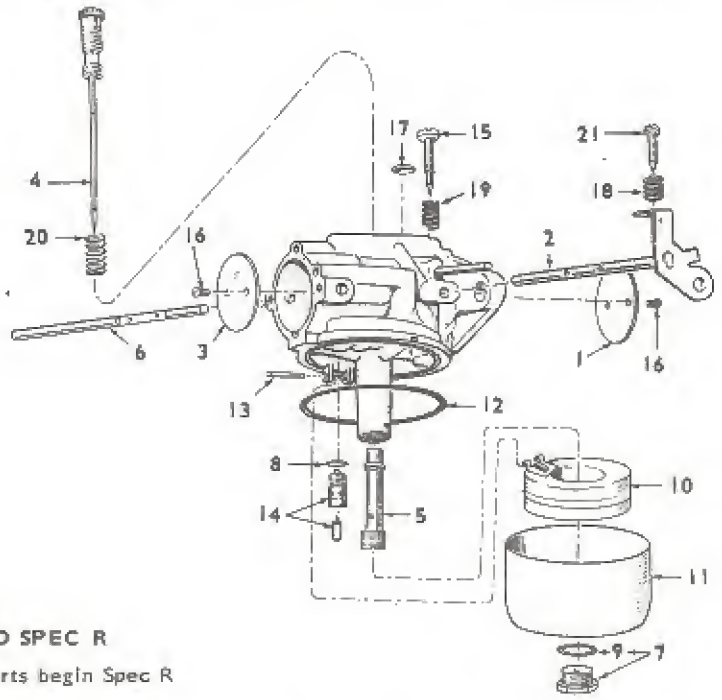
OPTIONAL FUEL SYSTEM GROUP
(GAS AND COMBINATION GAS-GASOLINE)

REF. NO.	PARTS NO.	QTY. USED	PARTS DESCRIPTION
* 1	148C311	1	Regulator, Gas (Garretson Mfr.)
3	*CARBURETOR, GAS-GASOLINE		
	141K761	1	Key 1, To Spec R
	141D717	1	Key 1, Begin Spec R
	141K760	1	Key 2, 3, 4 To Spec R
	141D718	1	Key 2, 3, 4, Begin Spec R
3	CARBURETOR, GAS – KEY 2, 3, 4		
	141K764	1	To Spec R
	141D726	1	Begin Spec R
4	503-159	1	Hose, Regulator to Carb.
5	503P32	2	Clamp, Hose
6	148A519	1	Connector, Hose
7	505-57	1	Plug, 1/8", Regulator
8	505-101	1	Nipple, 3/8 x 1", Reg. Out.
9	505-39	1	Elbow, 3/8", Reg. Out
11	148A107	1	Vent, Regulator
12	504-7	1	Valve, Shut-Off (Fuel Pump Inlet)
14	149A638	1	Plate, Fuel Pump Hole Crankcase (Gas Fuel Plts.)
15	143A231	1	Wire, Choke Stop, Gas-Gasoline
*	148-390	1	Reg. Repair Kit $13.85

* - See separate group for components and gasket kit.







CARBURETOR PARTS GROUP - PRIOR TO SPEC R

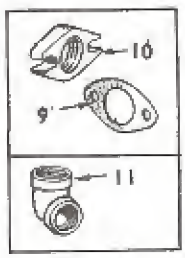
NOTE: See separate group for carburetor parts begin Spec R

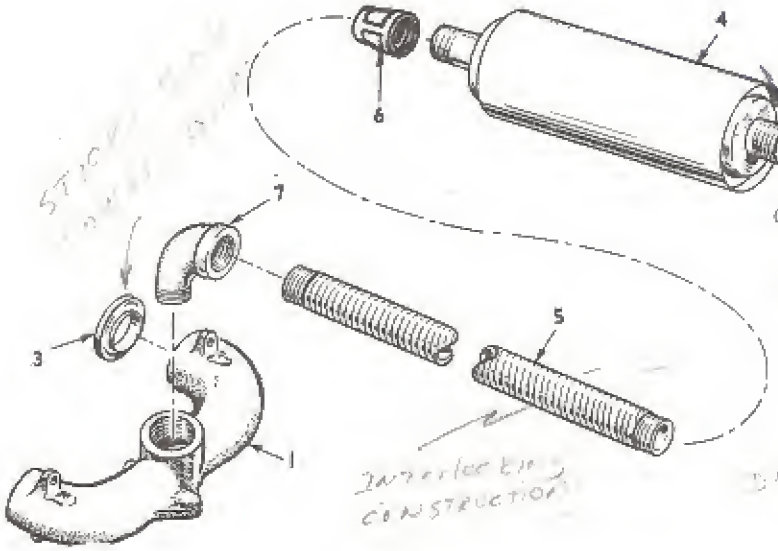
REF. NO.	PARTS NO.	QTY. USED	PARTS DESCRIPTION
	CARBURETOR, GASOLINE		
	141K763	1	Key 1
	141K762	1	Key 2, 3, 4, 5
	CARBURETOR, GAS-GASOLINE, OPTIONAL		
	141K761	1	Key 1
	141K760	1	Key 2, 3, 4
	141K764	1	Carburetor Gas, Optional Key 1, 2, 3, 4
	143K200	1	Repair Kit, To Spec G
	143K298	1	Repair Kit, Spec G through P - Includes Parts Marked **
	143K201	1	**Gasket Kit - Includes Parts Marked *
	141A281	1	*Gasket, Carb. Flange
1	143-202	1	Valve, Throttle
2	143-203	1	Shaft & Lever, Throttle
3	143-220	1	Valve, Choke, Key 1
3	143-204	1	Valve, Choke, Key 2, 3, 4, 5
4	143-205	1	**Needle, Idle Jet & High Speed Adj. To Spec G

REF. NO.	PARTS NO.	QTY. USED	PARTS DESCRIPTION
4	143-295	1	**Needle, Idle Jet & High Speed Adj. - Spec G through P
5	143-206	1	**Nozzle To Spec G
5	143-296	1	**Nozzle Spec G through P
6	143-221	1	Shaft & Lever, Choke, Key 1
6	SHAFT, CHOKE, KEY 2, 3, 4, 5		
	143-207	1	Gasoline Carb., To Spec J
	143A315	1	Gasoline Carb., Spec J through P
	143A232	1	Gas-Gasoline Carb., To Spec J
	143A316	1	Gas-Gasoline Carb., Spec J through P
7	143-208	1	Screw & Gasket, Bowl
8	143A15	1	*Gasket, Fuel Inlet Valve
9	143-209	1	*Gasket, Bowl Screw
10	143-105	1	Float & Lever To Spec G
10	143-297	1	Float & Lever Spec G through P
11	143-210	1	Bowl
12	143-77	1	*Gasket, Bowl Ring
13	143-212	1	**Pin, Float Lever (Not Used for Gas Only)
14	143-341	1	**Valve, Fuel Inlet (Gasoline Carb.)
15	143-213	1	Screw, Idle Adj. To Spec G
15	143-299	1	Screw, Idle Adj. Spec G through P (Gasoline Carb.)
15	143-213	2	Screw, Idle Adj. To Spec G (Gas-Gasoline Carb.)
15	143-213	1	Screw, Idle Adj. 45° from Vertical Spec G through P (Gas-Gasoline Carb.)

REF. NO.	PARTS NO.	QTY. USED	PARTS DESCRIPTION
15	143-299	1	Screw, Idle Adj., Top of Carb., Spec G through P (Gas-Gasoline Carb.)
15	143-213	1	Screw, Idle Adj. (Gas Carb.)
16	812-14	4	**Screw, #3-48 x 3/16, Choke & Throttle Valve
17	143-110	1	Plug, Expansion
18	143-214	1	Spring, Throttle Adj. Screw
19	143-112	1	Spring, Idle Adj. Screw (2 for Gas-Gasoline)
20	143-114	1	Spring, High Spd. Adj. Needle
21	143-215	1	Screw, Throttle Lever Adj.
24	145A308	1	Tube, Gas Inlet, Gas & Gas-Gasoline Only
25	NEEDLE, GAS ADJ., GAS & GAS-GASOLINE		
	145A309	1	To Spec J
	148A589	1	Spec J through P
26	SPRING, GAS ADJ., GAS & GAS-GASOLINE		
	148A10	1	To Spec J
	148A590	1	Begin Spec J through P
28	505-8	1	Plug, 1/8", Gas Only

* - Contained in Gasket Kit.
** - Contained in Repair Kit.



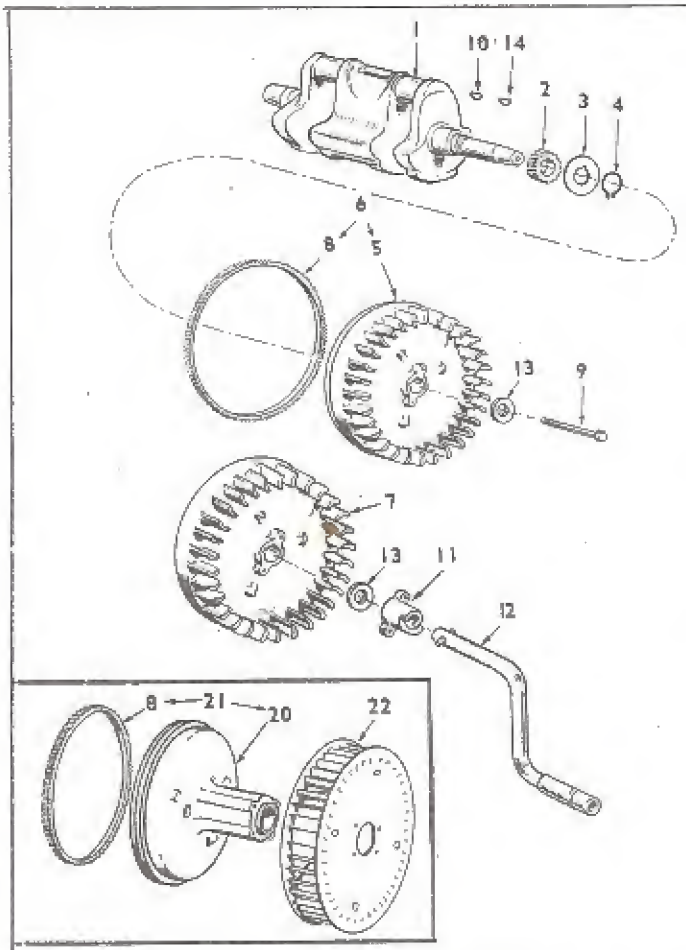


MANIFOLD AND EXHAUST GROUP

REF. NO.	PARTS NO.	QTY. USED	PARTS DESCRIPTION
1	154C633	1	Manifold, Exhaust
1	154C695	1	Manifold, Exhaust, VACU-FLO COOLED Plts. Key 2,3,4
3	154A463	2	Gasket
4	155B77	1	Muffler, 1-1/2" Inlet
4	155B456	1	Muffler, (Hsd. Plts. Only) 1-1/2" In.
5	155B492	1	Tube, Exhaust, Flexible 1-1/4" Thread
5	155B849	1	Tube, Exhaust, Flexible (Hsd. Plts. Only) 10-1/4", 1-1/4" Thread

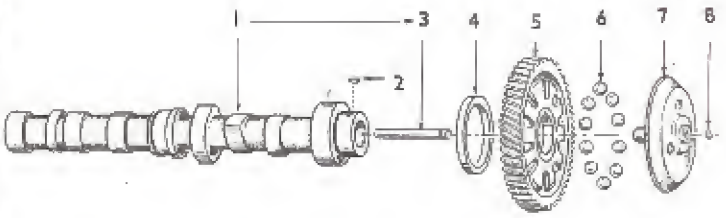
REF. NO.	PARTS NO.	QTY. USED	PARTS DESCRIPTION
6	505-36	1	Coupling, Reducer (1-1/2" to 1-1/4")
7	505-186	1	Elbow, Street (1-1/4" x 90°)
9	154A133	1	Gasket, Outlet VACU-FLO COOLED Plts. Key 2,3,4
10	155A170	1	Flange, VACU-FLO COOLED Plts. Key 2,3,4
11	505-43	1	Elbow (1-1/2"), (Hsd. Plts. Only)

CRANKSHAFT AND FLYWHEEL GROUP



REF. NO.	PARTS NO.	QTY. USED	PARTS DESCRIPTION
1	104D439	1	Crankshaft
2	104B418	1	Gear
3	104A416	1	Washer, Retainer
4	518-188	1	Ring, Lock
5	104B473	1	Flywheel, Key 2, 3
6	104B472	1	Flywheel, Key 4, 5(Includes Ring Gear)
7	160D692	1	Flywheel, Magneto, Key 1
8	104B423	1	Gear, Ring, Key 4, 5
9	800-500	1	Screw, 7/16-14 x 5-½", Flywheel
10	515-1	1	Key, Gear
11	104B429	1	Crankdog
12	192B350	1	Crank
13	526A185	1	Washer, Flywheel
14	KEY, FLYWHEEL TO CRANKSHAFT		
	515-2	1	Spec A Only
	515-153	1	Begin Spec B
	FLYWHEEL, VACU-FLO COOLED		
20	104B527	1	Key 2, 3
21	104B526	1	Key 4(Incl. Ring Gr.)
22	134C1150	1	Wheel, Blower, VACU-FLO COOLED Key 2, 3, 4

CAMSHAFT GROUP

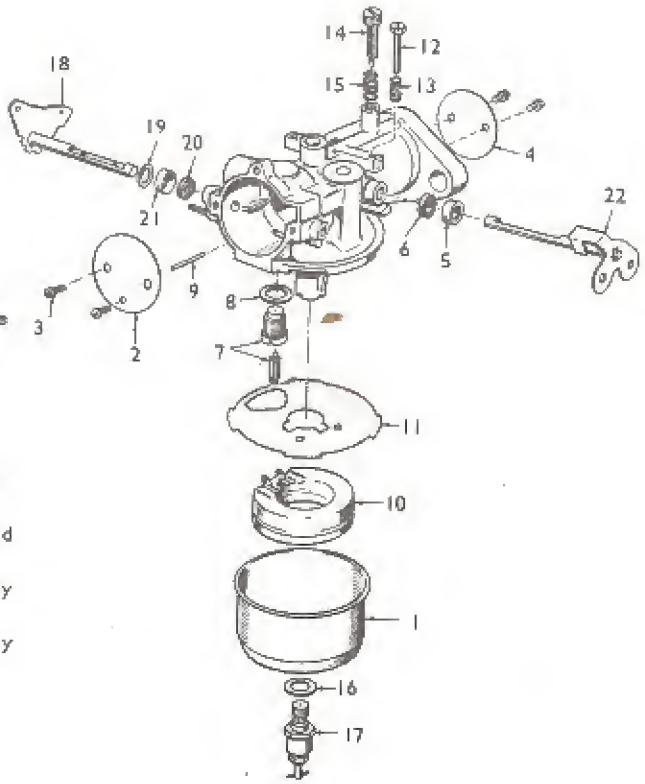


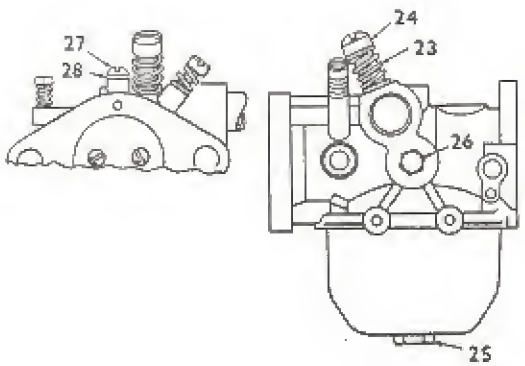
REF. NO.	PARTS NO.	QTY. USED	PARTS DESCRIPTION
1	CAMSHAFT - INCLUDES CENTER PIN		
	105A219	1	To Spec P
	105A272	1	Begin Spec P
2	515-1	1	Key, Cam. Gear or Dist. Gear
3	150A75	1	Pin, Center
4	105A205	1	Washer, Thrust
5	105B218	1	Gear, Includes Flyball Spacer & Plate
6	510-46	10	Flyball, Governor
7	150C775	1	Cup, Governor
8	150A78	1	Ring, Snap, Center Pin

REF. NO.	PART NO.	QTY. USED	PARTS DESCRIPTION
	CARBURETOR, GASOLINE		
	141D693	1	Manual Choke
	141D692	1	Electric Choke
	CARBURETOR, GAS-GASOLINE (Optional)		
	141D717	1	Manual Choke
	141D718	1	Electric Choke
	141D726	1	Carburetor, Gas Only (Opt.)
	141P747	1	Repair Kit
	141K748	1	Gasket Kit
	141A281	1	Gasket, Carburetor Flange
1	141P708	1	Bowl, Fuel
2	141P741	1	Plate, Choke (Not used on Gas only units)
3	141P698	4	Screw & Washer, Choke & Throttle Plate Mtg. (2 used on Gas only units)
4	141P706	1	Plate, Throttle
5	141P705	1	Retainer, Seal
6	141-661	1	Seal, Rubber
7	141P704	1	Valve Seat Assy., Fuel (Not used on Gas only Units)
8	141P696	1	Washer, Fuel Valve Seat (Not used on Gas only units)
9	141P703	1	Shaft, Float (Not used on Gas only units)
10	141P702	1	Float Assy. (Not used on Gas only units)
11	141P701	1	Gasket, Bowl to Body
12	141P700	1	Screw, Throttle Stop
13	141P711	1	Spring, Throttle Stop
14	NEEDLE IDLE ADJUSTING		
	141P713	1	Gasoline and Gas only Units
	141P713	2	Gas-Gasoline Units
15	SPRING, IDLE NEEDLE		
	141P710	1	Gasoline and Gas only Units
	141P710	2	Gas-Gasoline Units
16	141A77	1	Washer, Main Jet Assy.
17	141-712	1	Jet Assy., Main (Adjustable) (Not used on Gas only Units)
18	SHAFT, CHOKE		
	141-742	1	Manual Choke Units
	141B679	1	Electric Choke Gasoline Units
	141B716	1	Electric Choke Gas-Gasoline Units
19	141P699	1	Washer, Manual Choke Units
20	141P697	1	Seal, Felt - Manual Choke Units
21	141P203	1	Retainer, Felt Seal - Manual Choke Units
22	141P709	1	Shaft & Lever, Throttle
23	141-733	1	Spring, Main Gas Needle - Gas and Gas-Gasoline Units
24	141-734	1	Needle, Main Gas Adjusting - Gas and Gas-Gasoline Units
25	141-736	1	Nut, Bowl - Gas only Units
26	141-737	1	Plug, Pipe (1/8") - Gas Only Units
27	141-738	1	Screw, #10-32 - Gas Only Units
28	141-739	1	Washer, Gas Only Units

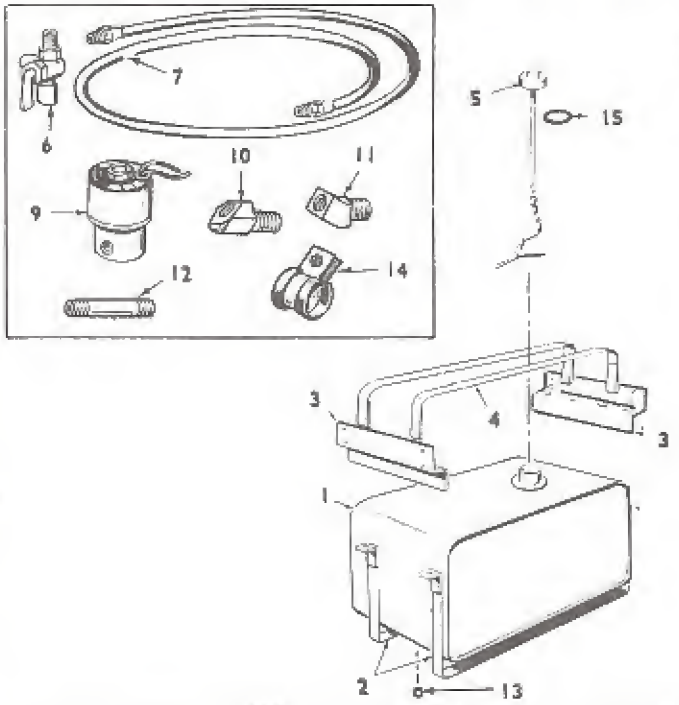
CARBURETOR PARTS GROUP - Begin Spec R

NOTE: See separate group for carburetor parts prior to Spec R

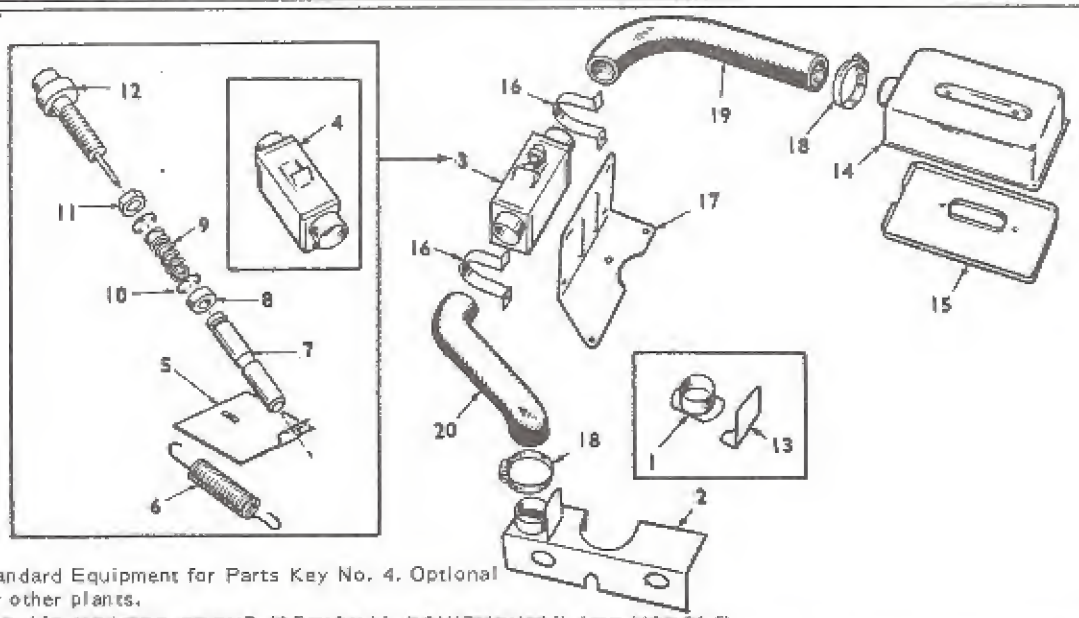




MOUNTED FUEL TANK GROUP (OPTIONAL EQUIPMENT) - HOUSED PLANTS



REF. NO.	PART NO.	QTY. USED	PARTS DESCRIPTION
1	159A802	1	Tank, Fuel (9-Gal.)
2	159A786	2	Strap, Mounting
3	159B789	2	Bracket, Support
4	159A787	2	Strap, Holddown
5	159B512	1	Cap and Indicator
6	504P4	1	Valve, Shut-off
7	501A5	1	Line, Fuel-Flex (18-1/2")
9	307P565	1	Valve, Solenoid (12-V)
10	502-65	1	Elbow, Male (45°) Fuel Pump Inlet
11	502-53	1	Elbow (45°), Solenoid Outlet
12	502-32	1	Nipple (1/8" x 2"), Solenoid Valve
13	505-57	1	Plug (1/8")
14	332-50	1	Clip, Fuel Line Support
15	159-751	1	Gasket, Fuel Tank Cap

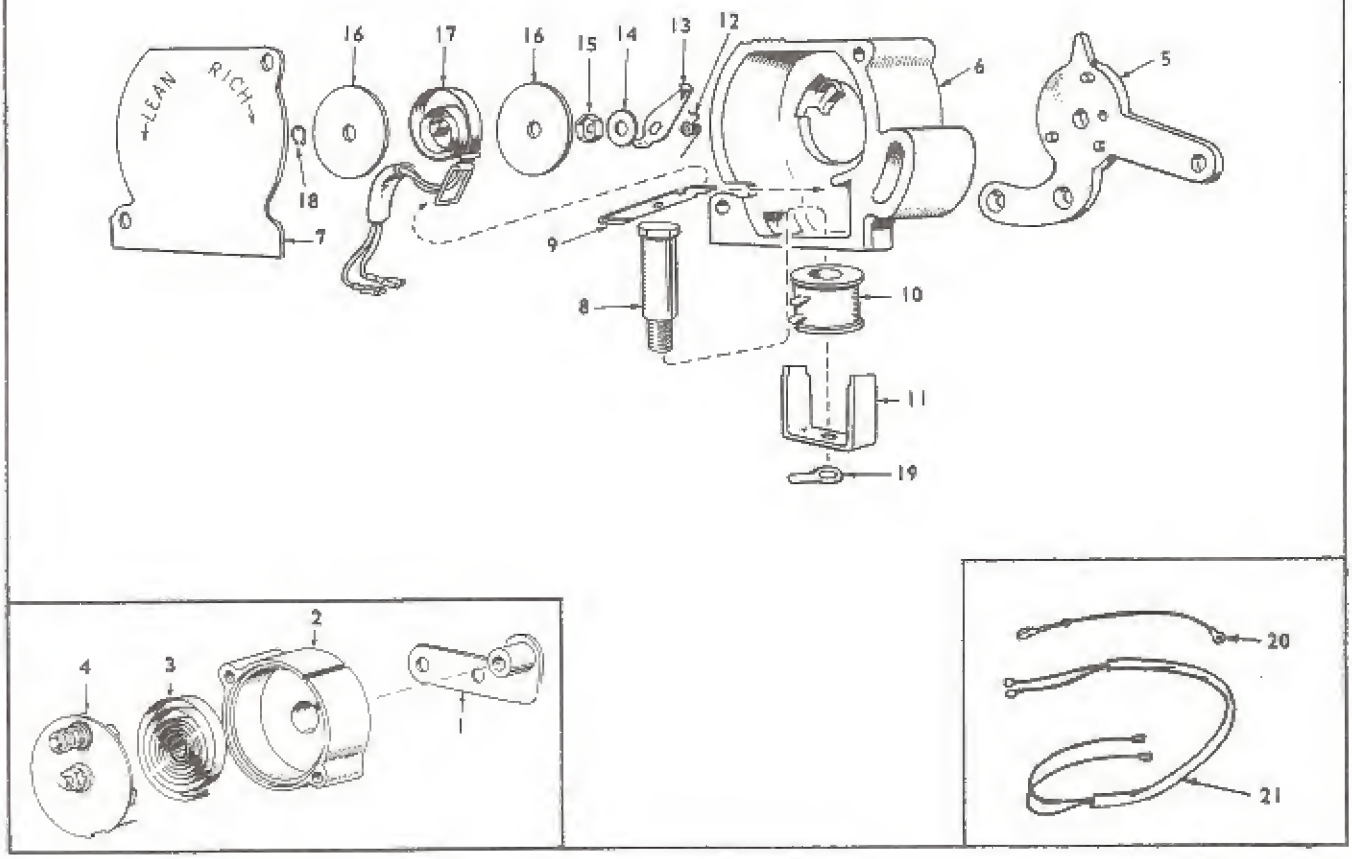


NOTE: Standard Equipment for Parts Key No. 4. Optional for other plants.

CARBURETOR AIR HEATER GROUP (OPTIONAL EQUIPMENT)(LATE MODELS)

REF. NO.	PART NO.	QTY. USED	PARTS DESCRIPTION
	KIT, AIR HEATER		
	140K890	1	Pressure Cooled Plants with Duct or Duct & Shutter
	140K890	1	Vacu-Flo Cooled Plants
	140K891	1	Pressure Cooled Plants without Duct or Shutter
1	133A187	1	Adapter, Hose-air outlet - Pressure Cooled Plants with Duct or Duct & Shutter and Vacu-Flo Cooled Plants.
2	133B191	1	Plenum, Manifold Heater - Pressure Cooled Plants without Duct or Shutters.
3	140B788	1	Control Assembly, Temp. Includes Parts marked *
4	140B785	1	*Housing, Temperature Control
5	140B782	1	*Shutter, Temperature Control
6	140B786	1	*Spring, Shutter Control
7	140A784	1	*Plunger, Temperature Control
8	140A808	1	*Spacer, Vernatherm
9	140A787	1	*Spring, Vernatherm
10	518-205	2	*Ring, Retaining
11	870-195	1	*Nut, Locking - Vernatherm
12	309A181	1	*Vernatherm, Temp. Control
13	140A789	1	Shield, Air Outlet Hose - Pressure Cooled Plants with Duct or Duct & Shutter and Vacu-Flo Cooled Plants.
14	140B790	1	Cover, Air Cleaner
15	140C791	1	Pan, Air Cleaner
16	140A821	2	Clamp, Temp. Control Support
17	140B822	1	Support, Temp. Control
18	503P458	2	Clamp, Hose
19	503B474	1	Hose, Control to Air Clnr.
20	503B476	1	Hose, Adapter (or plenum) to Control

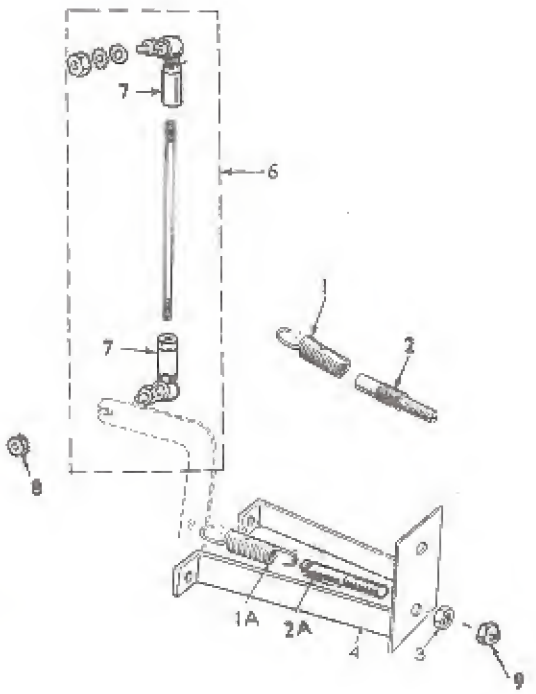
ELECTRIC CHOKE AND THERMO-MAGNETIC CHOKE GROUP

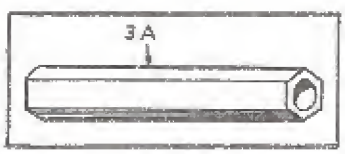


REF. NO.	PARTS NO.	QTY. USED	PARTS DESCRIPTION
1	153A315	1	Adapter, Key 2,3,4,5, to Spec J
2	153A324	1	Bracket, Mtg. Key 2,3,4,5, to Spec J
3	153A321	1	Element, Key 2,3,4,5, to Spec J
4	COVER ASSEMBLY, CHOKE		
	153A325	1	12-V, Key 3,4,5, To Spec J
	153A114	1	24-V, Key 2,3, To Spec J
5	153C385	1	Plate, Mtg., Begin Spec J
6	153D386	1	Body, Begin Spec J
7	153C389	1	Cover, Begin Spec J
8	153B391	1	Core, Solenoid, Begin Spec J
9	153A395	1	Armature, Begin Spec J
10	307B801	1	Coil, Solenoid Assy., Begin Spec J
11	153B392	1	Frame, Solenoid, Begin Spec J
12	SPRING		
	153B387	1	Spec J through R
	153B425	1	Begin Spec S
13	153B390	1	Lever, Thermostat, Begin Spec J
14	526-18	1	Washer (17/64" I.D. x 5/8" O.D. x 1/16"), Begin Spec J

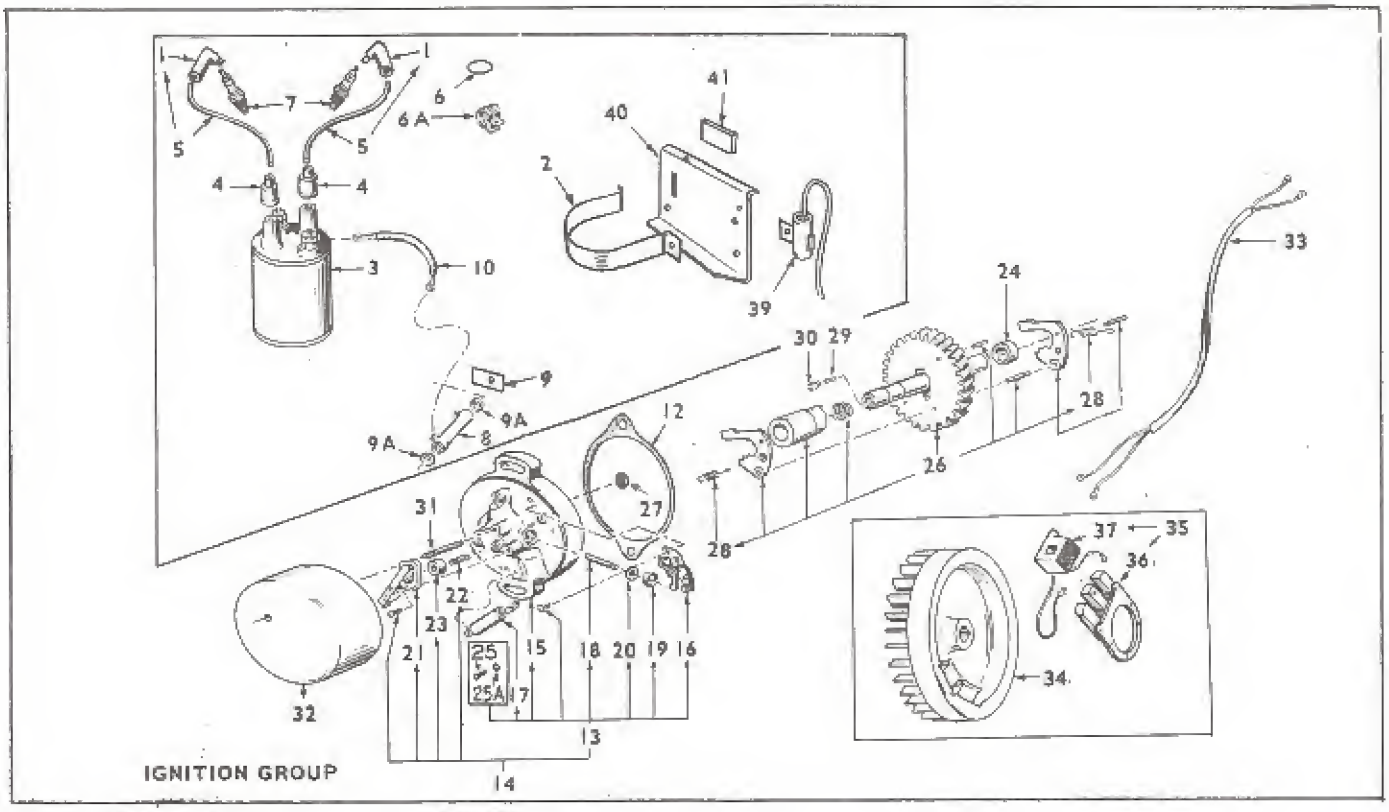
REF. NO.	PARTS NO.	QTY. USED	PARTS DESCRIPTION
15	870-134	1	Palnut (1/4-20), Begin Spec J
16	153A399	2	Insulator, Begin Spec J
17	HEATER ASSEMBLY		
	153B400	1	Spec J through R (NOTE: See next entry)
	153B422	1	Begin Spec S (NOTE: Recommended for plants Spec J through R - also order 153B425 Spring for these plants)
18	518-129	1	Ring, Retaining, Begin Spec J
19	332A876	1	Terminal Ground, Begin Spec J
20	LEAD, CHOKE - BEGIN SPEC J		
	336A1551	1	Choke to Ign. Coil, Key 2, 3
	336A1549	1	Choke to Ground, Key 2, 3, 4, 5
	336A1609	1	Choke to Control, Key 2, 3
21	HARNESS, CHOKE - BEGIN SPEC J		
	338B328	1	Key 2, 3
	338B329	1	Key 4, 5

GOVERNOR GROUP





REF. NO.	PARTS NO.	QTY. USED	PARTS DESCRIPTION
1	150A821	1	Spring, Gov. – To Spec R
1A	150A1084	1	Spring, Gov. – Begin Spec R
2	150A822	1	Stud, Adjusting – To Spec R
2A	150A1082	1	Stud, Adjusting – Begin Spec R
3	NUT, ADJUSTING		
	104A91	1	To Spec R
	862-3	1	Begin Spec R
3A	NUT, ADJUSTING - VACU FLO COOLED PLANTS		
	150A924	1	To Spec R
	150A1113	1	Begin Spec R
4	BRACKET ASSEMBLY		
	150A813	1	Key 1, To Spec R
	150A1108	1	Key 1, Begin Spec R
	150A812	1	Key 2, 3, 4, 5, To Spec R
	150A1107	1	Key 2, 3, 4, 5, Begin Spec R
6	LINKAGE ASSEMBLY		
	150A965	1	To Spec R
	150A1076	1	Begin Spec R
7	JOINT, BALL (EARLY PLANTS 1 ONLY)		
→	150A974	2	To Spec R
	150A1081	2	Begin Spec R
→ 8	870-131	1	Nut, Keps, Joint Arm
9	NUT, LOCKING		
	870-130	1	To Spec R (3/8-24")
	870-133	1	Begin Spec R (3/8-16")



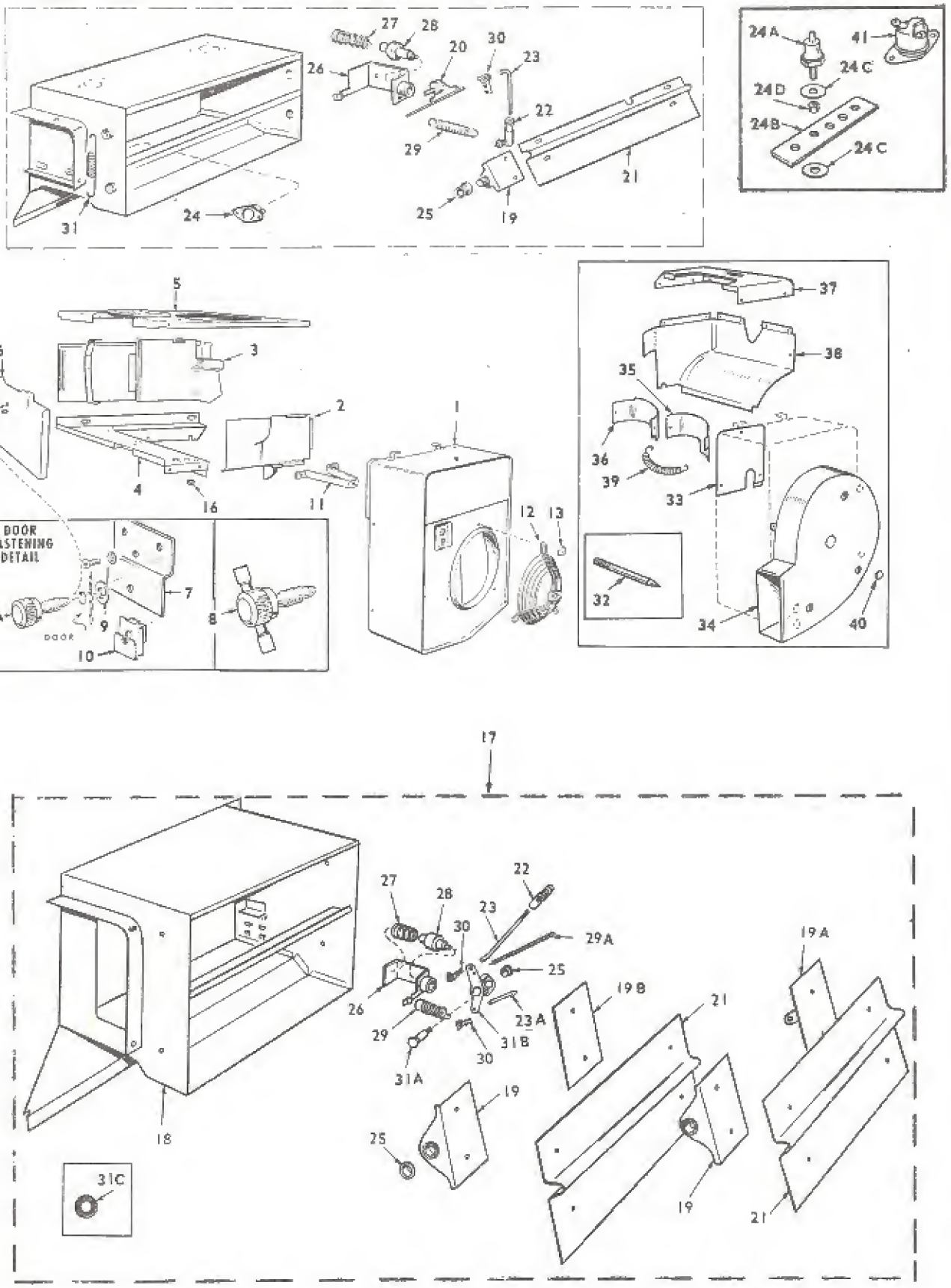
IGNITION GROUP

REF. NO.	PARTS NO.	QTY. USED	PARTS DESCRIPTION
1	314P32	2	*Suppressor, Spark Plug
2	160B682	1	Clamp, Coil, Key 2,3,4,5
2	160B890	1	Clamp, Coil, Key 2,3,4,5, VACU-FLO COOLED Plts.
3	160C792	1	Coil, Key, 2,3,4,5
4	160A558	2	Nipple, Ignition Cables Key 2,3,4,5
5	CABLE, SPARK PLUG		
	167A1384	2	26", Key 1
	167A1387	2	14-1/2", Key 2,3,4,5
	167A1386	2	10-1/2", Key 2,3,4,4, VACU-FLO Plts.
6	509-35	1	"O" Ring (Cables) Key 2,3,4,5
6A	332-51	1	Clip, Leads, Key 1
7	167-4	2	Plug, Spark Champion H10
8	304A60	1	Resistor, Ignition, Key 2,3,4,5
9	304A292	1	Insulator, Resistor Mtg. Key 2,3,4,5
9A	304-14	1	Washer, Resistor (2) for Vacu-Flo Plants)
10	LEAD		
	336A333	1	Coil to Resistor, Key 2,3,4,5
	336A30	1	Coil to Resistor-VACU-FLO COOLED Plts, Key 2,3,4,5
	336A179	1	Resistor to Breaker, VACU-FLO COOLED Plts. Key 2,3,4,5
	336A1347	1	Coil to Control, VACU-FLO COOLED Plts., Key 2,3,4,5
12	160A721	1	Gasket, Breaker Plate
13	160B762	1	Plate Assy., Breaker, Key 1,2,3
14	160C714	1	Plate Assy., Breaker, Key 4,5 (Also with Low Oil Pressure Switch Key 2,3)
15	160A891	1	Plate Only, Brkr. (Incl. Plugs)
16	160A2	1	Point Set
17	312A116	1	Condenser
18	160A716	1	Plunger, Ignition Breaker
19	160A717	1	Cup, Plunger, Diaphragm
20	160A718	1	Diaphragm, Ignition Plunger
21	SWITCH, ASSY., CENTRIFUGAL		
	309A134	1	Start-Disconnect, Key 4,5
	309A134	1	Plants with Low Oil Pressure Switch, Key 2,3

REF. NO.	PARTS NO.	QTY. USED	PARTS DESCRIPTION
22	PLUNGER, CENTRIFUGAL SWITCH		
	309A140	1	Start-Disconnect, Key 4,5
	309A140	1	Plants with Low Oil Pressure Switch, Key 2,3
23	DIAPHRAGM, CENTRIFUGAL SWITCH PLUNGER		
	160A263	1	Start-Disconnect, Key 4,5
	160A263	1	Plants with Low Oil Pressure Switch, Key 2,3
24	160A720	1	Spacer, Timing Control
25	516A72	1	Screw, Plunger Hole, Key 1,2,3
25A	509-65	1	Seal, Plunger Hole, Key 1,2,3
26	160A707	1	Gear and Shaft Assy., Timing
27	160A806	1	Disc, Thrust, Plunger Brg.
28	160B711	2	Spring, Timing Weight
29	160A773	1	Spring, Thrust Plunger
30	160A774	1	Plunger, Thrust
31	520A347	1	Stud, Cover
32	COVER, BREAKER		
	160A769	1	Key 1
	160A719	1	Key 2,3,4,5
33	HARNESS, WIRING		
	338B280	1	Breaker to Control, Only on Plts. with Low Oil Pressure Switch, Key 2,3
	338B258	1	Breaker to Control, Key 4 Lt P wire ?
34	160D692	1	Flywheel, Magneto, Key 1
35	160A698	1	Backplate Assy., Magneto Complete, Key 1
36	160A697	1	Backplate & Poleshoe, Magneto Key 1
37	160B693	1	Coil, Magneto, Key 1
39	312A58	1	*Condenser, Ignition Coil, (.1 Mfd.)
40	166B295	1	Bracket, Ignition Coil - VACU-FLO COOLED Plts Key 2,3,4
41	160A887	1	Pad, Ignition Coil, VACU-FLO COOLED Plts Key 2,3,4

* - Use began during Spec F, will also work on early models.

13TD 1229



AIR HOUSING AND OPTIONAL SHUTTER GROUP

REF. NO.	PART NO.	QTY. USED	PARTS DESCRIPTION
1	134D1050	1	Housing, Blower
1	134D1325	1	Housing, Blower VACU-FLO COOLED, Key 2,3,4
2	134D1048	1	***Housing Cyl. Air - Frt.
3	134C1051	1	**Housing, Cyl. Air - Rear
4	134D1419	1	**Panel, Cyl. Air Hsg. (Bottom-Vacufl)
5	**COVER CYL. AIR HOUSING		
	134C1121	1	To Spec R
	134C1787	1	Begin Spec R
6	134D1039	1	**Panel, Air Hsg. Door
7	134A1554	1	**Bracket, Air Hsg. Door Panel
8	134A1373	1	**Screw, Door
9	134A1180	2	**Washer, Door (Early Models 8 for top cover)
10	870-194	5	**"U" Clip, Door Panel & Cover
10	870-179	6	"J" Clip, Housing ; VACU-FLO COOLED Plts. Only
11	134B1085	1	Support, Blower Hsg. & Grille
12	134D1091	1	**Grille
13	134A1092	3	**Retainer, Grille
16	508A2	2	**Grommet, Bottom Hsg. Panel-Vacufl
17	134C1811	1	Shutter assy., (OPTIONAL) (Std. for Key 5) Includes parts marked*
18	134D1804	1	*Duct only, air outlet (NOTE: Cannot be used on early model shutter assembly with external shutter pivot springs)
19	134A1242	3	£Bracket & Pivot, Shutter
19	134A1800	2	*Bracket & Pivot, Shutter
19A	134A1802	1	*Bracket & Pivot, Shutter & Rod
19B	134A1801	1	*Bracket & Pivot, Shutter & Spring
20	134D1238	1	£Bracket Shaft, and pin - Shutter
21	134B1252	2	£Shutter, Air outlet
21	134B1807	2	*Shutter, Air outlet
22	150A998	1	£*Joint, Ball
23	134A1247	1	£Rod, Shutter Control
23	134A1606	1	*Rod, Shutter Control - Upper
23A	134A1607	1	*Rod, Shutter Control - Lower
24	309P162	1	Switch, Hi-temp. (Mts. on Air Duct) to Spec P
24A	309P196	1	Switch, Hi-temp. (Mts. on Manifold Stud) -Normally closed
24B	309A195	1	Bracket, Hi-temp. Switch - Begin Spec P
24C	508A126	2	Washer, Insul.-High Temp. Switch - Begin Spec P
24D	508A127	1	Insulator, Sleeving-Hi temp. Switch-Begin Spec P
25	134P1248	4	£Bearing, Shutter
25	134A1783	4	*Bearing, Shutter
25	134P1248	2	*Bearing, Actuating Arm
26	134A1244	1	£Bracket & Guide, Vernatherm
26	134A1610	1	*Bracket & Guide, Vernatherm
27	134A656	1	£*Spring, Vernatherm Element
28	309A85	1	£*Element, Vernatherm
29	134A658	1	£* Spring, Shutter Return - Lower
29A	134A1817	1	*Spring, Shutter Return - Upper
30	518-4	1	£*Clip, Rod (RH)
30	518-6	2	*Clip, Rod (LH)
31	134A1437	2	£Spring, Shutter Pivot
31A	134A1605	1	*Shaft, Actuating Arm
31B	134B1604	1	*Arm, Actuating
31C	508-2	1	£*Grommet
32	104A528	1	Pointer, Timing, VACU-FLO COOLED Plts., Key 2,3,4
33	134B1415	1	Cover, Governor Access, VACU-FLO COOLED Plts., Key 2,3,4
34	134D1369	1	Scroll, Blower, VACU-FLO COOLED Plts., Key 2,3,4
35	134A1109	1	Shroud, Cyl., #1(Front) VACU-FLO COOLED Plts., Key 2,3,4
36	134A1337	1	Shroud, Cyl., #2(Rear), VACU-FLO COOLED Plts., Key 2,3,4
37	134D1327	1	Cover, Cyl., Shroud, VACU-FLO COOLED Plts., Key 2,3,4
38	134D1328	1	Wrapper, Shroud, VACU-FLO COOLED Plts., Key 2,3,4
39	134P944	1	Spring, Shroud Wrapper, VACU-FLO COOLED Plts., Key 2,3,4
40	517-21	3	Button, Dot, Scroll, VACU-FLO COOLED Plts., Key 2,3,4
41	309P162	1	Switch, Hi-Temperature (Mts on Scroll) VACU-FLO COOLED Plts. (Optional)
42	517-35	1	Plug, Dot Button - Blower Hsg.

*-Included in OPTIONAL -(Standard Equipment for Parts Key No. 5) Air Discharge Shutter

**-These parts are for Pressure Cooled plants only.

£-These parts apply to the early model shutters, with external shutter pivot springs.

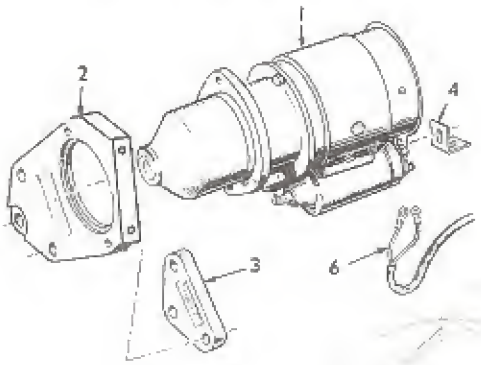
Thermostatic Air Shutter
HAT cut out
wire harness
LOP cut out -
Reset relay 309A217
freq sw.?

HAT
KIT — 309-211

Shutter kit ?
134D1249
Item 17 134C1811 should be ok.

AUTOMOTIVE STARTER GROUP

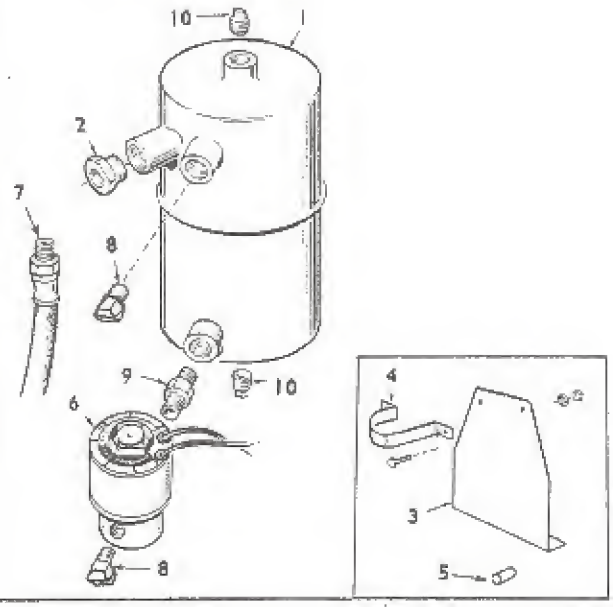
NOTE: Used on plants with Key 3,4.



REF. NO.	PARTS NO.	QTY. USED	PARTS DESCRIPTION
1	*MOTOR, STARTING		
	191C324	1	12-Volt
	191C443	1	24-Volt
2	191C512	1	Flange, Mounting
3	191A311	1	Spacer, Flange
4	191A365	1	Bracket, Support
6	338B255	1	Harness, Starter to Cont., Key 4, 5
	191-432	1	Clutch, Starter
	SWITCH, START SOL.		
	191-433	1	12-Volt
	191P715	1	24-Volt
	BRUSH SET, STARTER		
	191-434	1	12-Volt
	191P714	1	24-Volt
	ARMATURE		
	191P712	1	12-Volt
	191P713	1	24-Volt
	191P497	1	Bearing, Drive, End

* - Check starter nameplate, and order components not listed from your nearest dealer.

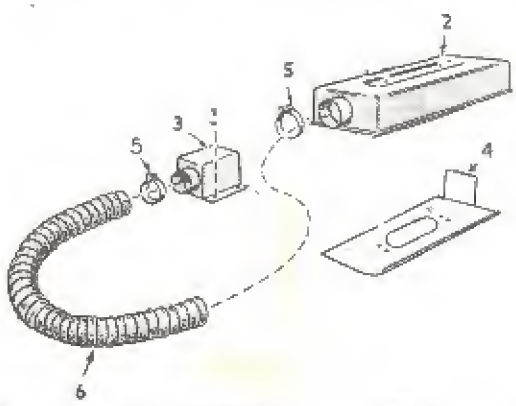
RESERVOIR (DAY) TANK GROUP (OPTIONAL EQUIPMENT)



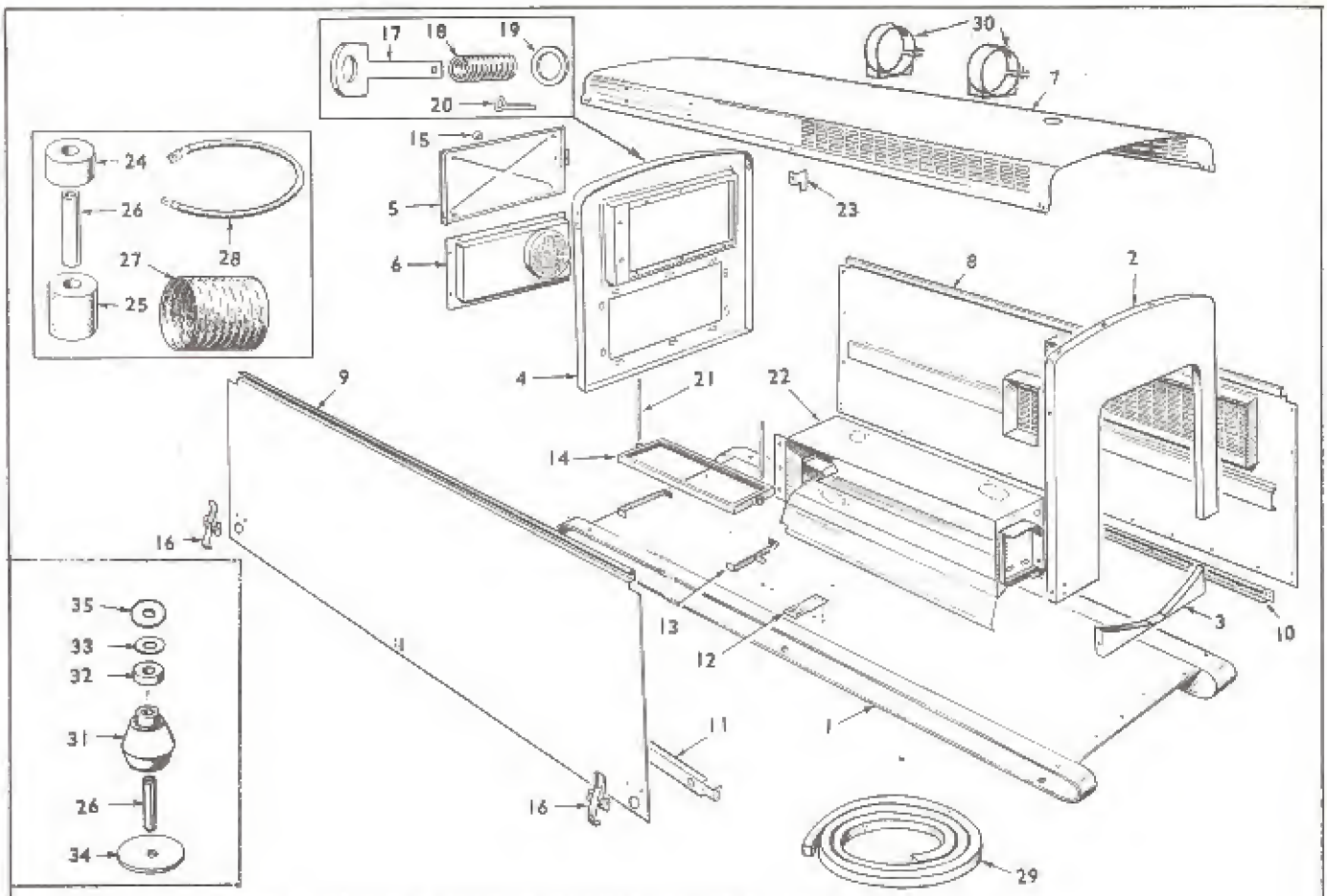
REF. NO.	PARTS NO.	QTY. USED	PARTS DESCRIPTION
1	TANK, RESERVOIR		
	159B294	1	One Quart
	159B746	1	Two Quart
2	159A705	1	Reducer, Restricted
3	BRACKET, TANK		
	159B759	1	One Quart
	159B826	1	Two Quart
4	BAND, TANK		
	159A121	1	One Quart
	159B825	1	Two Quart
5	159A761	2	Spacer, Brkt. to Rkr. Cover
6	307P565	1	Valve, Solenoid, (12-V)
7	LINE		
	501A5	1	To Main Tank
	501A78	1	Fuel Pump to Res. Tank
	501A22	1	To Carburetor
8	ELBOW (45°)		
	502-65	1	Sol. Valve to Carb. Line
	502-53	1	Fuel Pump to Line
9	505-82	1	Nipple, Sol. Valve to Tank
10	505-57	2	Plug

CARBURETOR AIR HEATER GROUP (OPTIONAL EQUIPMENT) (EARLY MODELS)

NOTE: Standard Equipment for Parts Key No. 4. Optional for other plants. See separate group for late models.



REF. NO.	PARTS NO.	QTY. USED	PARTS DESCRIPTION
2	140A650	1	*Cover, Air Clnr., Hot Air
3	140B654	1	*Box, Air Out., Shutter
4	140B658	1	*Cover, Air Clnr. Pan
5	503-4	2	*Clamp, Hose
6	503A397	1	*Hose, Air

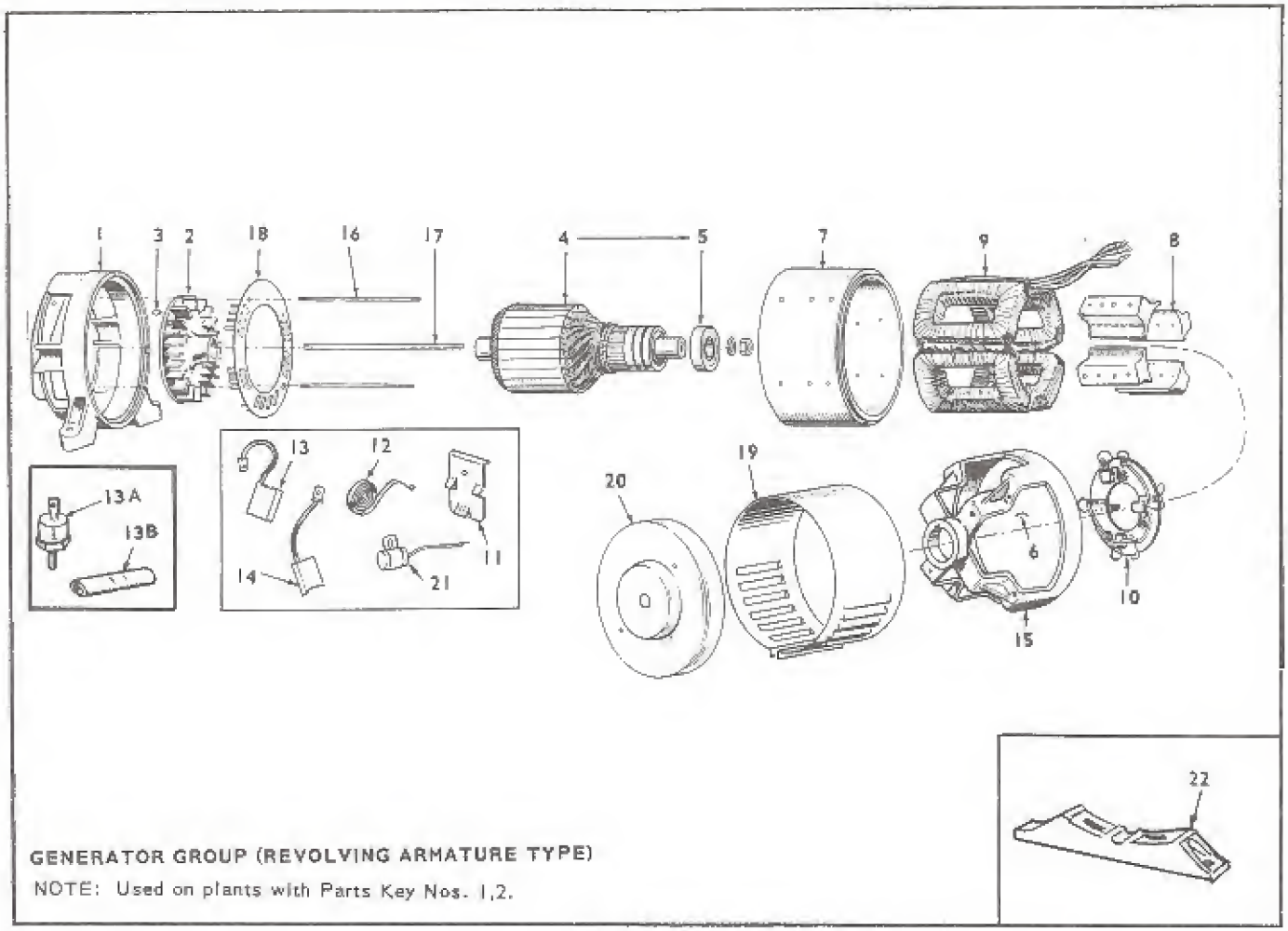


HOUSING GROUP, HOUSED AC PLANTS (OPTIONAL EQUIPMENT)

NOTE: 4 possible options exist: (1) Housing, (2) Housing plus Meter Panel, (3) Housing plus Shutters, (4) Housing plus Meter Panel and Shutters.

REF NO	PARTS NO.	QTY USED	PARTS DESCRIPTION
1	403B679	1	Base
2	405B1323	1	Panel, Upper (Eng. End)
3	405B1333	1	Panel, Lower (Eng. End)
4	PANEL, (GENERATOR END) REAR		
	405B1322	1	Plants WITHOUT Meter Panel
	405C1331	1	Plants WITH Meter Panel
5	PANEL, DOOR - REAR END		
	405B1329	1	Plants WITHOUT Meter Panel
	405B1332	1	Plants WITH Meter Panel
6	405B1330	1	Panel, Generator Access
7	405B1348		Panel, Top
8	PANEL, RIGHT SIDE		
	405B1347	1	(Plts. without Shutters)
	405B1355	1	(Plts. with Shutters)
9	405B1346	1	Panel, Left Side
10	405B1344	1	Rail, Stiffener Right Side
11	405B1345	1	Rail, Stiffener Left Side
12	405A1341	2	Bracket, Stiffener Rail
13	416A501	2	Bracket, Battery
14	416B502	1	Frame, Battery, Hold-down
15	406-2	1	Knob, Rear Door Panel
16	406A105	2	Fastener, Housing
17	405A1138	2	Pin, Shoulder, Rear Panel
18	405B1139	2	Spring, Shoulder Pin, Rr. Panel
19	526-22	2	Washer, Shoulder Pin, Rr. Panel
20	516-39	2	Pin, Shoulder Pin
21	520A490	2	Stud, Battery Holddown
22	DUCT, AIR OUTLET		
	134D1250	1	Plants Without Shutters
	134D1249	1	Plants With Shutters
23	405A1181	1	Stop, Door.

REF. NO.	PARTS NO.	QTY. USED	PARTS DESCRIPTION
24	402A36	4	Mount, Cylindrical Shaped, Upper, To Spec H
25	MOUNT, VIBRATION, CYLINDRICAL SHAPED, LOWER		
	402A276	2	Eng. End, To Spec H
	402A278	2	Gen. End, To Spec H
26	BUSHING, SPACER, VIBRATION MOUNT		
	402A46	4	To Spec H
	402A290	4	Begin Spec H
27	503A423	1	Hose, Flex., Gen. Air Duct
28	336A476	1	Strap, Ground, Eng. to Frame
29	895P104	1	Stripping, Foam Weather (76" Required for Hsg.) Cement in Place
30	140B631	2	Band, Muffler
31	CUSHION, VIBRATION, CONE SHAPED (TAPERED)		
	402B284	2	Eng. End, Begin Spec H
	402B286	2	Gen. End, Key 1,2. Begin Spec H
	402B285	2	Gen. End, Key 3,4 Begin Spec. H
32	402B282	4	Snubber, Shock Mtg., Begin Spec H
33	526-14	4	Washer, (29/64" I.D. x 1-1/2" O.D. x 1/8") Only with Cone Shaped Cushions
34	526A199	4	Washer, (29/64" I.D. x 3-1/4" O.D. x 1/8"), Only with Cone Shaped Cushions
35	526-198	As Req.	Washer, (5/8" I.D. x 1-1/2" O.D. x 1/16") Only with Cone Shaped Cushions



GENERATOR GROUP (REVOLVING ARMATURE TYPE)

NOTE: Used on plants with Parts Key Nos. 1,2.

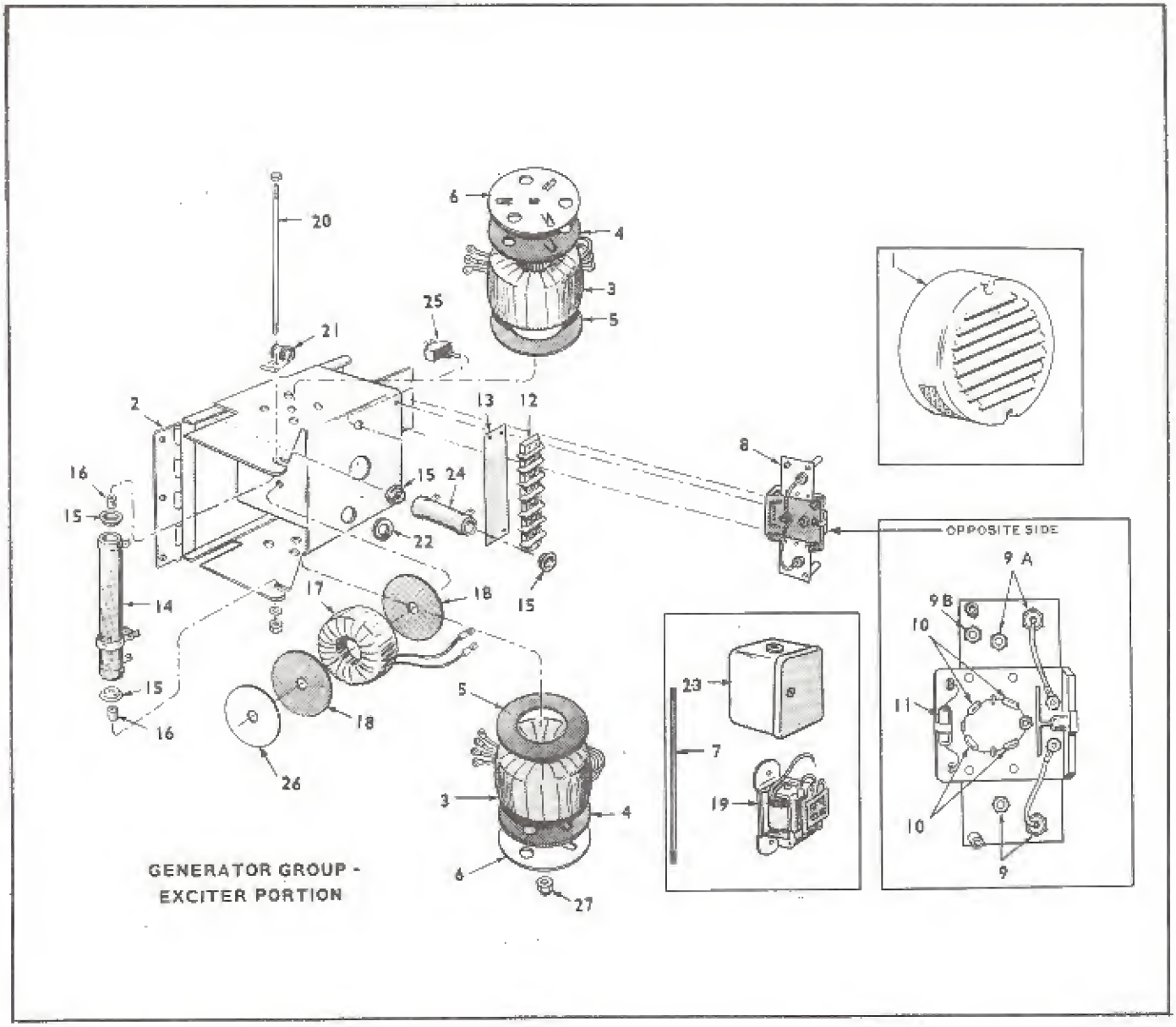
REF. NO.	PARTS NO.	QTY. USED	PARTS DESCRIPTION
1	ADAPTER		
	231E100	1	Key 1,2, to Spec H
	231E113	1	Key 1,2 Begin Spec H
	231E120	1	Key 3
2	205C65	1	Blower
3	515-6	1	Key, Blower
4	*	1	Armature Assy., Incl. Brg. & Blower
5	510A47	1	Bearing
6	232A596	1	Clip, Bearing Stop
7	210D347	1	Frame Only, Less Coils & Poleshoes
8	221A90	4	Shoe, Pole - Field
9	COIL ASSEMBLY, FIELD - SET OF 4 COILS		
	222A1600	1	Key 1 - To Spec P
	222A1658	1	Key 1 - Begin Spec P
	222A1591	1	Key 2,3 - To Spec P
	222A1639	1	Key 2,3 - Begin Spec P
10	RIG ASSEMBLY, KEY 1,2 BRUSH		
	212C293	1	120-V, 1-phase
	212C295	1	120/240
10	RIG ASSEMBLY, BRUSH		
	Key 1, 2		
	212C293	1	120-V, 1-phase
	212C295	1	120/240-V, 1-phase
	212C294	1	240-V, 1-phase
	212C298	1	120/240-V, 1-phase Reconnectible and 120/208-V, 3-phase
	212C297	1	240-V, 3-phase
	Key 3		
	212C317	1	120-V, 1-phase
	212C329	1	240-V, 1-phase
	212C318	1	120/240-V, 1-phase & 240-V, 3-phase
	212C316	1	120/208-V, 3-phase
	*	1	220/380-V, 3-phase
11	SPRING BRUSH		
	Key 1,2 to Spec K		
11	212B1105	8	120-V & 240-V, 1-ph. (AC&DC)
11	212B1105	4	120/240-V, 1-ph., Reconnectible (DC)
11	212B1123	4	120/240-V, 1-ph., Reconnectible (AC)
11	212B1105	4	120/208-V, 3-ph.(DC)
11	212B1123	4	120/208-V, 3-ph.(AC)
11	212B1105	7	240-V, 3-ph.(AC & DC)
12	212B1003	4	120/240-V, non-reconnectible, 1-ph.(DC)
12	212A1004	3	120/240 V, 1-ph. (AC)
	Key 1,2 Begin Spec K		
11	212B1105	8	120-V & 240-V, 1-ph., 120/240-V, 1-ph, Reconnectible, & 120/208-V, 3-ph(AC & DC)

* - Refer to factory giving complete Model, Spec, and Serial Number.

REF. NO.	PART NO.	QTY. USED	PARTS DESCRIPTION
11	212B1105	7	240-V, 3-ph., & 120/240-V 1-phase non-reconnectible (AC & DC)
			Key 3
11	212B1105	12	120-V & 240-V, 1-ph. (AC & DC)
11	212B1105	14	120/240 V, 1-ph., & 240-V, 3-phase (AC & DC)
11	212B1105	16	120/208 V, 3-ph. (AC & DC)
13	BRUSH, COMMUTATOR (DC)		
			Key 1,2 to Spec K
	214A61	4	120-V, 240-V, & 120/240-V (Reconnectible), 1-ph. and 120/208 & 240-V, 3-ph.
	214A30	4	120/240-V, 1-ph., non-reconnectible
	214A61	4	Key 1,2 Begin Spec K - all
	214A88	8	Key 3, all
13A	358B7	1	Rectifier, Begin Spec P
13B	332-556	1	Connector, Begin Spec P
14	BRUSH, COLLECTOR RING (AC)		
			Key 1, 2
	214A50	4	240-V, 1-ph. & 3-ph.
	214A56	4	120-V, & 120/240-V (Reconnectible), 1-ph., and 120/208-V, 3-ph.
	214A62	3	120/240-V, 1-ph. non-reconnectible - to Spec K
	214A56	3	120/240-V, 1-ph., non-reconnectible - Begin Spec K
			Key 3
	214A56	4	120-V, 1-ph.
	214A50	4	240-V, 1-ph.
	214A50	6	120/240 V, 1-ph., & 240-V, 3-ph.
	214A50	8	120/208-V, 3-ph.
15	BELL, END		
	211D97	1	120-V, 60-Cy., 1-Ph., & 240-V 50 & 60-Cy., 1-Ph.
	211D98	1	120/240-V, 60-Cy., 1-Ph., 120/208-V 60-Cy., 3-ph., 220/380-V, 50-Cy., 3-Ph., & 240-V, 60-Cy., 3-Ph.

REF. NO.	PART NO.	QTY. USED	PARTS DESCRIPTION
16	STUD, GENERATOR THROUGH		
	520A498	2	Key 1,2
	520A487	2	Key 3
17	STUD, ARMATURE THROUGH		
			Key 1,2
	520A407	1	120-V, & 240-V, 1-ph.
	520A416	1	120/240-V, 1-ph. and 120/208-V, & 240-V, 3-ph.
			Key 3
	520A45	1	120-V, & 240-V, 1-ph.
	520A516	1	120/240-V, 1-ph. and 120/208-V, & 240-V, 3-ph.
18	SCROLL, GENERATOR AIR		
	232C1256	1	Key 1,2
	232C1815	1	Key 3
19	BAND, END BELL		
	234C2	1	120-V, 60-Cy., 1-Ph. & 240-V, 50 & 60 Cy., 1-PH. - To Spec P
	234C255	1	120-V, 60-Cy., 1-Ph. & 240-V, 50 & 60 cy., 1-Ph. - Begin Spec P
	234C5	1	120/240-V, 60-Cy., 1-Ph., 120/208-V, 60-Cy., 3-Ph., 220/380-V, 50-Cy., 3-Ph., & 240-V, 60-Cy., 3-Ph - To Spec P
	234C256	1	120/240-V, 60-Cy., 1-Ph., 120/208-V, 60-Cy., 3-Ph., 220/380-V, 50-Cy., 3-Ph., & 240-V, 60-Cy., 3-Ph - Begins Spec P
	234B228	1	Housed Plants Only
20	COVER, END BELL		
	211C99	1	To Spec P (Unhoused Plts.)
	211C114	1	Begin Spec P (Unhoused Plts.)
	211B229	1	Housed Plants only
21	312A58	As Req.	Condenser .1 Mfd. - AC
21	CONDENSER .5 MFD. - DC		
	312A17	1	120-V, 120/240-V, 1-Ph.
	312A27	1	120/208 V, 3-PH.
22	232D1811	1	Support, Generator - Key 3

~~O.S. Switch P/N 150A956~~ } ~~Kit Form~~
~~Print, Installation # 539B10~~
~~Wired with emergency test switch.~~



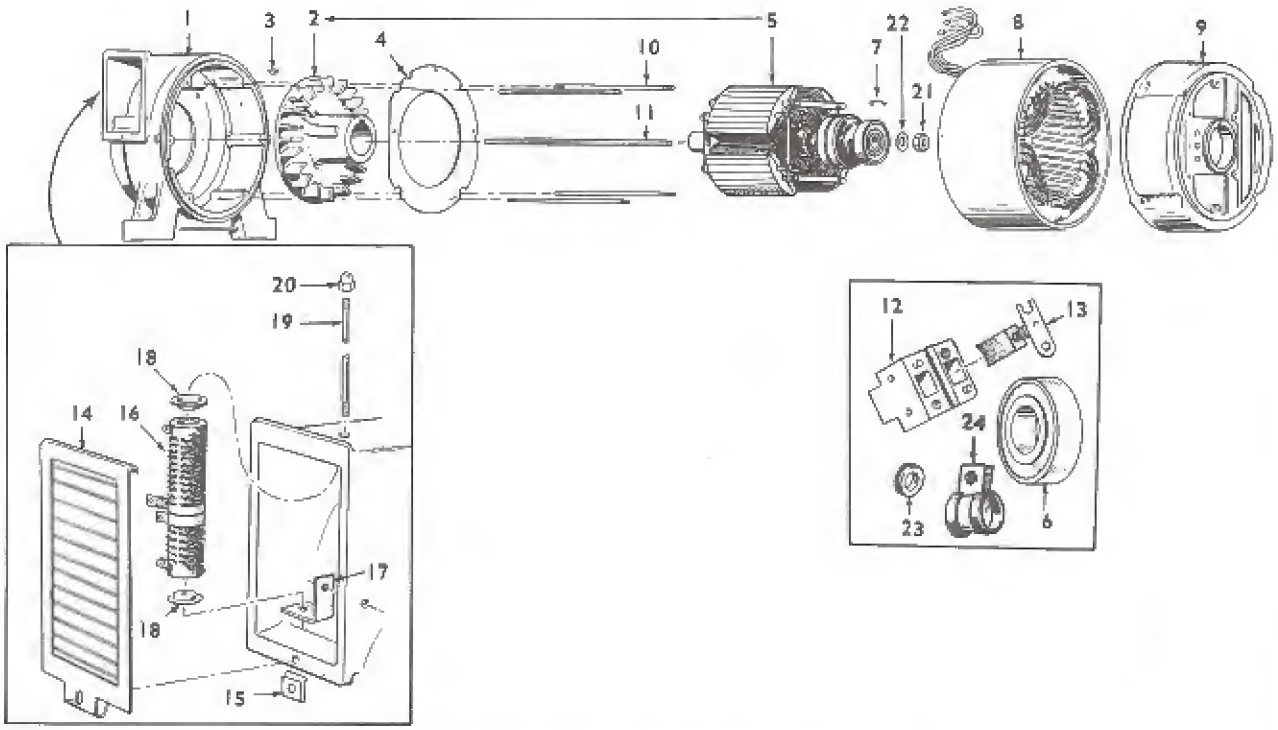
NOTE: Used on plants with Parts Key Nos. 4, 5.

NOTE: 02SX1N1A used on 60-cycle plants prior to Spec C.
04SX1N1A used on 60-cycle plants Spec C through G.
04SX1N1B used on all 60-cycle plants Spec H through M.
04SX1N1B used on all 60-cycle plants (Except 120/240-V, 1-Phase and 120/208-V, 3-Phase) begin Spec P.
→ 04SX1N3B used on 120/240-V, 1-Phase and 120/208-V, 3-Phase, 60-cycle plants begin Spec P.
06SX5IN1B used on all 50-cycle plants prior to Spec P.
06SX5IN1B used on all 50-cycle plants (Except 120/240-V, 1-Phase and 120/208-V, 3-Phase) Begin Spec P.
06SX5IN3B used on 120/240-V, 1-Phase and 120/208-V, 3-Phase, 50-cycle plants begin Spec. P.

Check plant nameplate for Magnecicer number and use correct column

REF. NO.	QTY. USED	PART DESCRIPTIONS	PART NUMBER					
			02SXINIA	04SXINIA	04SXINIB	04SXIN3B	06SXSINIB	06SXSIN3B
	1	Exciter Complete (Less Cover)	209-1	209-2	209-3	209-5	209-12	209-13
1	1	Cover, Exciter	234C154	234C154	234B185	234B185	234D185	234D185
2	1	Panel Only, Exciter	234B153	234B153	234B188	234B188	234B188	234B188
3	2	Reactor, Gate	315A84	315A99	315A99	315A99	315B104	315B104
4	2	Gasket, Gate Reactor Mounting, Outer	232A1553	232A1553	232A1553	232A1553	232A1553	232A1553
5	2	Gasket, Gate Reactor Mounting, Inner	232A1551	232A1551	232A1551	232A1551	232A1551	232A1551
6	2	Retainer, Gate Reactor	232A1552	232A1552	232A1552	232A1552	232A1552	232A1552
7	1	Stud, Gate Reactor Mounting	520A211	520A211				
8	1	Rectifier Assy., Resistor and Complete	305C242	305C259	305C259	305C387	305C264	305C388
9	2	Rectifier Only, Power Field, Negative	305P238	305P238	305P238	305P238	305P238	305P238
9A	2	Rectifier Only, Power Field, Positive	305P239	305P239	305P239	305P239	305P239	305P239
9B	1	Rectifier, Field Flash				305P239		305P239
10	4	Rectifier, Voltage Control	305P240	305P240	305P240	305P240	305P240	305P240
11	1	Resistor, Included in Rectifier Assy. (150-Ohm, 5-Watt)					304A512	304A512
11	1	Resistor, Incl. In Rectifier Assy. (500-Ohm, 5-Watt)	304P476	304P476	304P476	304P476		
12	1	Block, Terminal	332A699	332A699	332A745	332A745	332A745	332A745
13	1	Strip, Block Marker	332A700	332A738	332A746	332A925	332A746	332A925
14	1	Resistor, Fixed (200-Ohm, 50-Watt)	304A489					
14	1	Resistor, Tapped, 500-Ohm (425 Fixed, 75 Adj.)		304A511				
14	1	Resistor, Tapped, 500-Ohm (425 Fixed, 75 Adj.)			304A527	304A527	304A527	304A527
15	4	Washer, Resistor Centering (Two Only Used for 02SXINIA)	304A15	304A15	304A15	304A15	304A15	304A15
16	2	Spacer, Resistor Mounting	232A1550	232A1550	232A1474	232A1474	232A1474	232A1474
17	1	Reactor, Voltage Control	315A85	315A100	315A100	315A100	315A105	315A105
18	2	Gasket, Voltage Control Reactor	232A1548	232A1548	232A1548	232A1548	232A1548	232A1548
19	1	Relay, Field Build-up	307A584					
20	1	Stud (or Screw), Tapped Resistor Mounting	812-116	812-116	520A641	520A641	520A641	520A641
21	1	Clip, Tinnerman	332-50	332-50	332-51	332-51	332-51	332-51
22	1	Grommet, Rubber, For 7/8" Hole	508P8	508P8	508P8	508P8	508P8	508P8
23	1	Cover, Relay	307A643					
24	1	Resistor, Fixed (250-Ohm, 25-Watt)		304A510	304A510	304A510	304A510	304A510
25	1	Switch, Residual Reset			308A175		308A175	
26	1	Washer, Retainer, Voltage Control Reactor	526-173	526-173	526-173	526-173	526-173	526-173

John Hadley



GENERATOR GROUP - ALTERNATOR PORTION (REVOLVING FIELD TYPE)

NOTE: Used on plants with Parts Key Nos. 4,5.

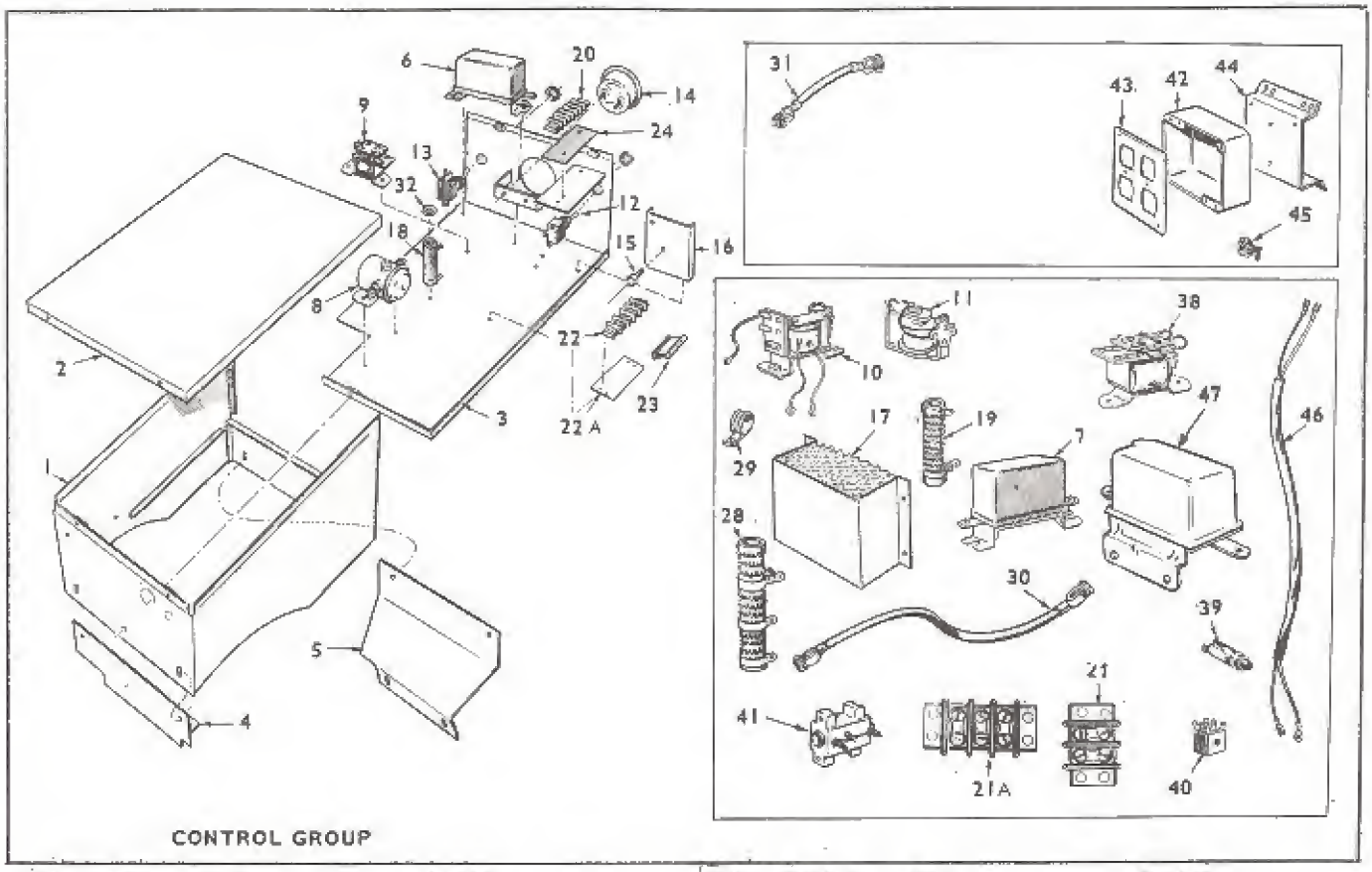
REF. NO.	PARTS NO.	QTY. USED	PARTS DESCRIPTION
1	ADAPTER, ENGINE TO GENERATOR		
	231E99	1	To Spec H
	231E111	1	Begin Spec H
	231E112	1	Mobile Application
2	205C64	1	Blower, Gen.
3	515-6	1	Key, Blower
4	234B162	1	Scroll, Gen. Air
5	*	1	Rotor Assy., Wound - Includes Brg., & Blower
→ 6	510A47	1	Bearing, Rotor
7	232A596	1	Clip, Bearing
8	*	1	Stator Assy., Wound
9	BELL, END, ALTERNATOR TO EXCITER		
	211E138	1	To Spec H
	211E146	1	Begin Spec H 211-4152
10	STUD, GEN. THROUGH, KEY 4		
	520A601	4	60-Cy., Plts., To Spec E
	520A636	4	60-Cy., Plts., Begin Spec E
	520A636	4	50-Cy., Plts.
10	STUD, GENERATOR THROUGH, KEY 5		
	520A607	4	To Spec E
	520A638	4	Begin Spec E
11	STUD, ROTOR THROUGH		
	520A612	1	Key 4
	520A613	1	Key 5
12	212A1064	2	Block, Coll. Ring Brush Guide
→ 13	214A59	4	Brush, Collector Ring, (AC)
14	234B172	1	Cover, Air Outlet
15	870-177	1	Clip, Air Outlet Cover Fastening
16	304A500	1	Resistor, Tapped Adj.
17	232A1565	1	Bracket, Resistor Mtg.
18	304A6	2	Washer, Resistor Centering

REF. NO.	PARTS NO.	QTY. USED	PARTS DESCRIPTION
19	520A620	1	Stud, Resistor Mtg.
20	866-1	1	Nut, Resistor Mtg.
21	NUT, ROTOR STUD, KEY 4		
	232A1567	1	60-Cycle
	110A67	1	50-Cycle
21	NUT, ROTOR STUD, KEY 5		
	232A1567	1	To Spec E (7/16-14)
	870P203	1	Begin Spec E (7/16-20)
22	232-200	1	Washer, Rotor Stud
23	GROMMET		
	508P95	1	Through Baffle Plate
	508B112	1	Lead Out
24	332-50	1	Clip, Brush Leads

*Refer to factory giving complete Model, Spec, and Serial Number.

add 539B10 item 6

O.S. switch P/N 150A956 } KIT
INSTALLATION PRINT # 539B10 }.
This switch is wired to emergency reset switch.



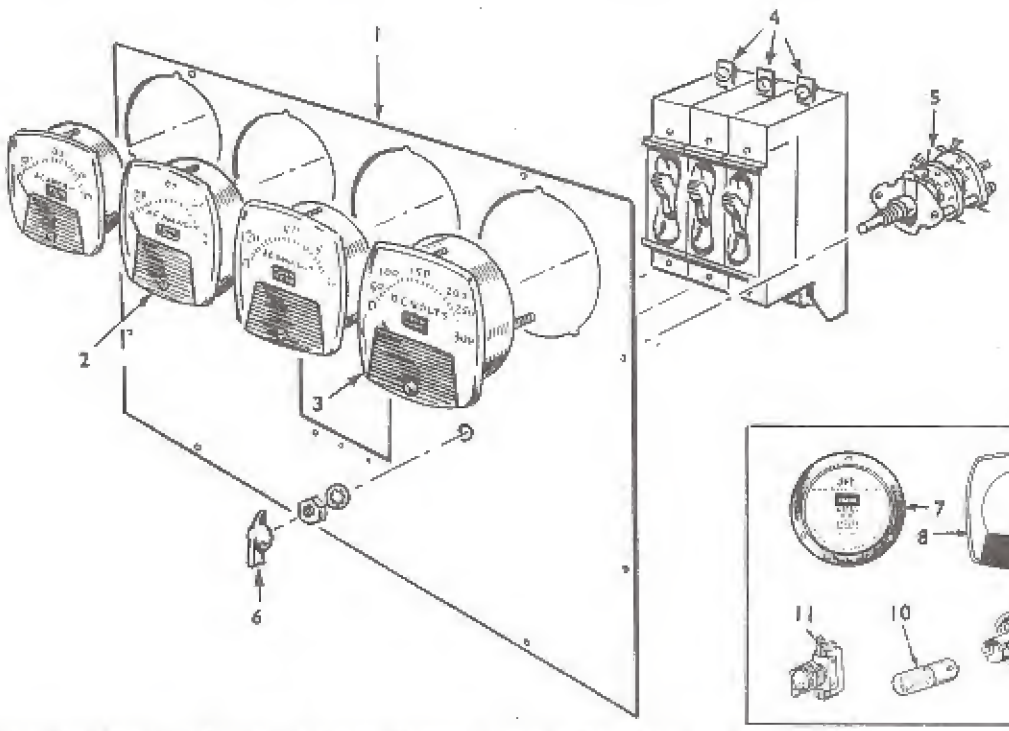
CONTROL GROUP

REF. NO.	PARTS NO.	QTY. USED	PARTS DESCRIPTION
1	BOX, CONTROL		
	301D2008	1	Key 2,3
	301C1962	1	Key 4,5
2	301B1963	1	Cover, Control, Key 2, 3, 4, 5
3	PANEL, CONTROL		
	301C2009	1	Key 2,3 - To Spec P
	301D2541	1	Key 2,3 - Begin Spec P
	301C1961	1	Key 4,5
4	BRACKET, CONTROL BOX (L.H.)		
	301C2010	1	Key 2,3
	301B1965	1	Key 4,5
5	BRACKET, CONTROL BOX (R.H.)		
	301B2011	1	Key 2,3
	301B1964	1	Key 4,5
6	307B597	1	Relay, Ignition Start, Key 4,5
7	307B180	1	Relay, Reverse Current, Key 2,3
8	SOLENOID, START		
	307B40	1	Key 2,3,4,5, To Spec M
	307B845	1	Begin Spec M
	307B40	1	Key 4,5, Begin Spec M
9	307B623	1	Relay, Ignition, Key 4,5
10	RELAY, START, DISCONNECT, KEY 2,3		
	306A28	1	To Spec P
	307B642	1	Begin Spec P
11	307B253	1	Relay, Stop, Key 2,3
12	308P154	1	Switch, Start-Stop, Key 2,3,4,5
13	308P2	1	Switch, Selector (Man. or Elec. Start) Key 2,3,4,5
14	AMMETER, CHG.		
	302A58	1	Key 2,3
	302A446	1	Key 4,5
15	RECTIFIER, 10-AMP, 100-VOLT PEAK		
	305A235	1	Key 4,5 - To Spec P
	305A235	1	Key 2,3,4,5 - Begin Spec P
16	BRACKET, RECT.		
	305A254	1	Key 4,5 - To Spec P
	305A254	1	Key 2,3,4,5 - Begin Spec P
17	301B2012	1	Cover, Res., Key 2,3
18	304A251	1	Resistor, Fixed (30-Ohm, 5-Watt) Key 2,3

REF. NO.	PARTS NO.	QTY. USED	PARTS DESCRIPTION
18	304A32	1	Resistor, Fixed (15-Ohm, 10-Watt) Key 4,5
18	304A217	1	Resistor, Fixed (1-Ohm, 10-Watt) Low Oil Press, Switch, Begin Spec F. Key 2,3,4,5
18	309A631	1	Resistor, Fixed (6-Ohm, 100-Watt) Key 2,3 Begin Spec P
19	304A506	1	Resistor, Adj. (6-Ohm, 150-Watt) Key 2,3 To Spec P
19	304A632	1	Resistor, Adj. (6-Ohm, 100-Watt) Key 2,3 Begin Spec P
20	332A537	1	Block, Terminal, 4-Pl. (Remote) Key 2,3,4,5
	BLOCK, TERMINAL, LOAD		
21	332A609	1	2-Pl., Key 2,3 (Also WITH Low Oil Press. Switch), To Spec F
21A	332A611	1	3-Pl., Key 2,3 (WITH Low Oil Press. Switch), Begin Spec F
22	332A706	1	Block, Terminal, 8-Pl., Load, Key 4,5
22A	332A739	1	Strip, Block Mkr. (4,5,6,7,8,9) Key 4,5
23	332K750	1	Marker Strip & Holder, Batt. Polarity Key 4,5 - prior to Spec P
24	332A566	1	Strip, Block Mkr. (B+, 1, 2, 3), Key 2,3,4,5
28	304A500	1	Resistor, Tapped Adj. (Mts. in Gen. Air Out.) Key 4,5
29	332P52	1	Clip, Key 4
30	CABLE, BATT. KEY 2,3,4,5		
	416A21	2	Pressure Cooled Plants
	416A21	2	VACU-FLO COOLED plants with Shutter
	416A77	2	VACU-FLO COOLED plants without Shutter
31	416A4	1	Cable, Batt. Jpr., Key 2,3,4,5
32	304A6	2	Washer, Res. Cent., Key 2,3
38	307B614	1	Relay, Latching, WITH Low Oil Press. Switch, Key 2,3,4 To Spec F
39	308-91	1	Switch, Reset, WITH Low Oil Press. Switch, Key 2,3,5 To Spec F

REF. NO.	PART NO.	QTY. USED	PARTS DESCRIPTION
40	305P197	1	Rectifier, Full Wave, Eyelet Conn. WITH Low Oil Press Switch, Key 4, To Spec F
41	320A104	1	Relay, Emergency, WITH Low Oil Press. Switch, Key 2,3,4,5, Begin Spec F
42	BOX, JUNCTION, KEY 1		
	330A30	1	120-V, 120/240-V, 60-Cy. - To Spec P
	330-28	1	120/208-V, 60-Cy. - To Spec P
	330-2B	1	Begin Spec P

REF. NO.	PART NO.	QTY. USED	PARTS DESCRIPTION
43	COVER, JUNCTION BOX, KEY 1		
	330P2	1	120-V, 120/240-V, 60-Cy. - To Spec P
	330-6	1	120/208-V, 60-Cy. - To Spec P
	330-6	1	Begin Spec P
44	301B2129	1	Bracket, Junction Box, Key 1
45	331-27	1	Connector, Load, Key 1
46	338A305	1	Harness, Wiring - Plt. Control to Start-Stop Switch (Hsd. Only)
47	305B383	1	Regulator, Voltage (2-Step) Key 2,3 Begin Spec P



AC METER PANEL GROUP - HOUSED MODELS (OPTIONAL EQUIPMENT)

REF. NO.	PARTS NO.	QTY. USED	PARTS DESCRIPTION
1	*	1	Panel
2	AMMETER, AC (CHECK SCALE, SELECT ACCORDING TO RATING)		
	302P418		Scale Reads 0-30
	302P444	As	Scale Reads 0-35
	302P419	Req.	Scale Reads 0-50
	302P458		Scale Reads 0-80
3	VOLTMETER, AC (CHECK SCALE, SELECT ACCORDING TO RATING)		
	302P421	1	Scale Reads 0-300
	302P422	1	Scale Reads 0-600
4	BREAKER, CIRCUIT (CHECK ORIGINAL PART, SELECT ACCORDING TO AMP. & VOLT. (120/240-V IS 1" WIDE, 480-V IS 1-1/2" WIDE)		
	320B150		20-Amp, 480-V
	320B151		25-Amp, 480-V
	320B20		35-Amp, 120/240-V
	320B153		40-Amp, 120/240-V
	320B198	As	45-Amp, 120/240-V
	320B52	Req.	50-Amp, 120/240-V
	320B195		55-Amp, 120/240-V
	320B148		70-Amp, 120/240-V
5	308-12	1	Switch, Voltmeter Sel., 3-Ph. Only
6	303-76	1	Knob, Sel. Switch, 3-Ph. Only

REF. NO.	PARTS NO.	QTY. USED	PARTS DESCRIPTION
7	METER, FREQUENCY		
	302-213	1	60-Cycle
	302-234	1	50-Cycle
8	302B448	1	Plate, Meter Face
9	322P72	2	Receptacle, Panel Lights
10	322-4	2	Bulb, Panel Light
11	308-2	1	Switch, Panel Light

* - Order by description, giving complete Model and Serial Number (ONAN Nameplate).

SERVICE KITS & MISCELLANEOUS

NOTE: For other kits, refer to the group for the part in question.

168K83	1	Gasket Kit, Plant
OVERHAUL KIT, PLANT (DOES NOT APPLY FOR PENNSYLVANIA APPROVED PLANTS)		
522K198	1	To Spec R
522K230	1	Begin Spec R
525P137		Paint, Touch-up Enamel, Green, 16 Ounce Pressurized Can

SPECIAL PARTS LIST

FOR JB SERIES

PENNSYLVANIA APPROVED

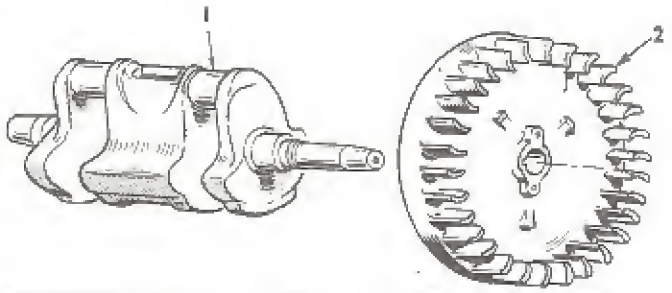
GENERATING PLANTS

Refer first to this list for Pennsylvania Approved plants. Parts not in this list refer to the main parts list. When referring to the main parts list, reference to Spec. letter or voltage also applies to these plants.

These plants are recognized by the numbers 30 (Gasoline Fuel), 31 (Gaseous Fuel), or 131 (Liquid Petroleum Fuel) appearing in the model. These numbers appear just before the diagonal line (/). (Example: 705JB-4R31/1P).

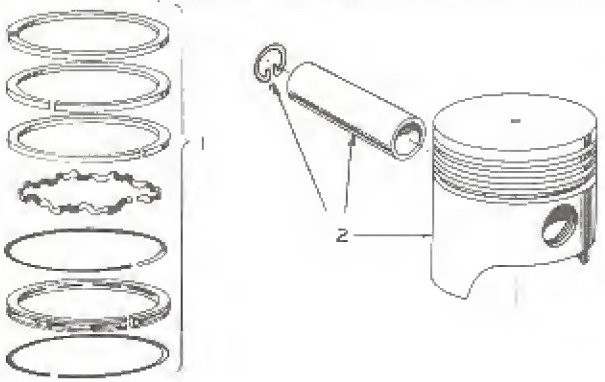
The Specification Letter advances (A, to B, B to C, etc.) with manufacturing changes.

CRANKSHAFT AND FLYWHEEL GROUP (SPECIAL LIST) – TO SPEC R



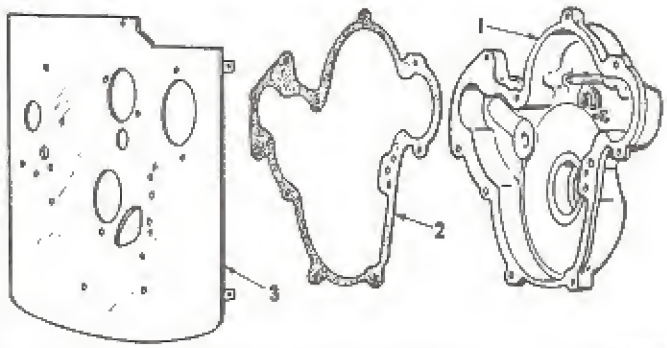
REF. NO.	PART NO.	QTY. USED	PARTS DESCRIPTION
1	104D430	1	Crankshaft
2	104B473	1	Flywheel

PISTON AND CONNECTING ROD GROUP (SPECIAL LIST)



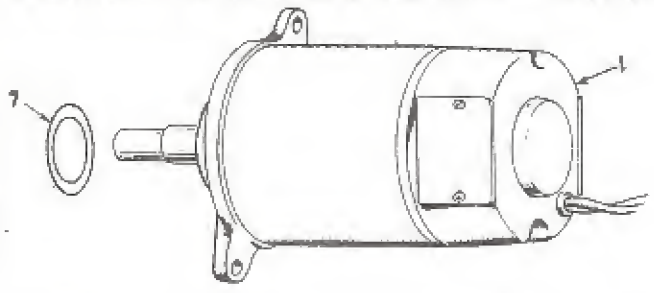
REF. NO.	PART NO.	QTY. USED	PARTS DESCRIPTION
1	113-107	2	Ring Set, Piston - Specify : Std., or .010", .020", .030", over. Gas Fuel Plants
2	112A106	2	Piston and Pin Assy. (Incl. Pin Retaining Ring) - Specify: Std., or .010", .020", .030" over. Gas Fuel Plants

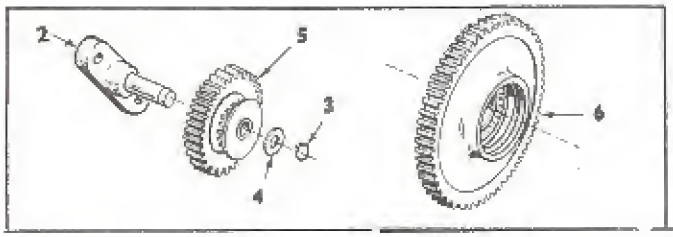
GEAR COVER GROUP (SPECIAL LIST) – TO SPEC R



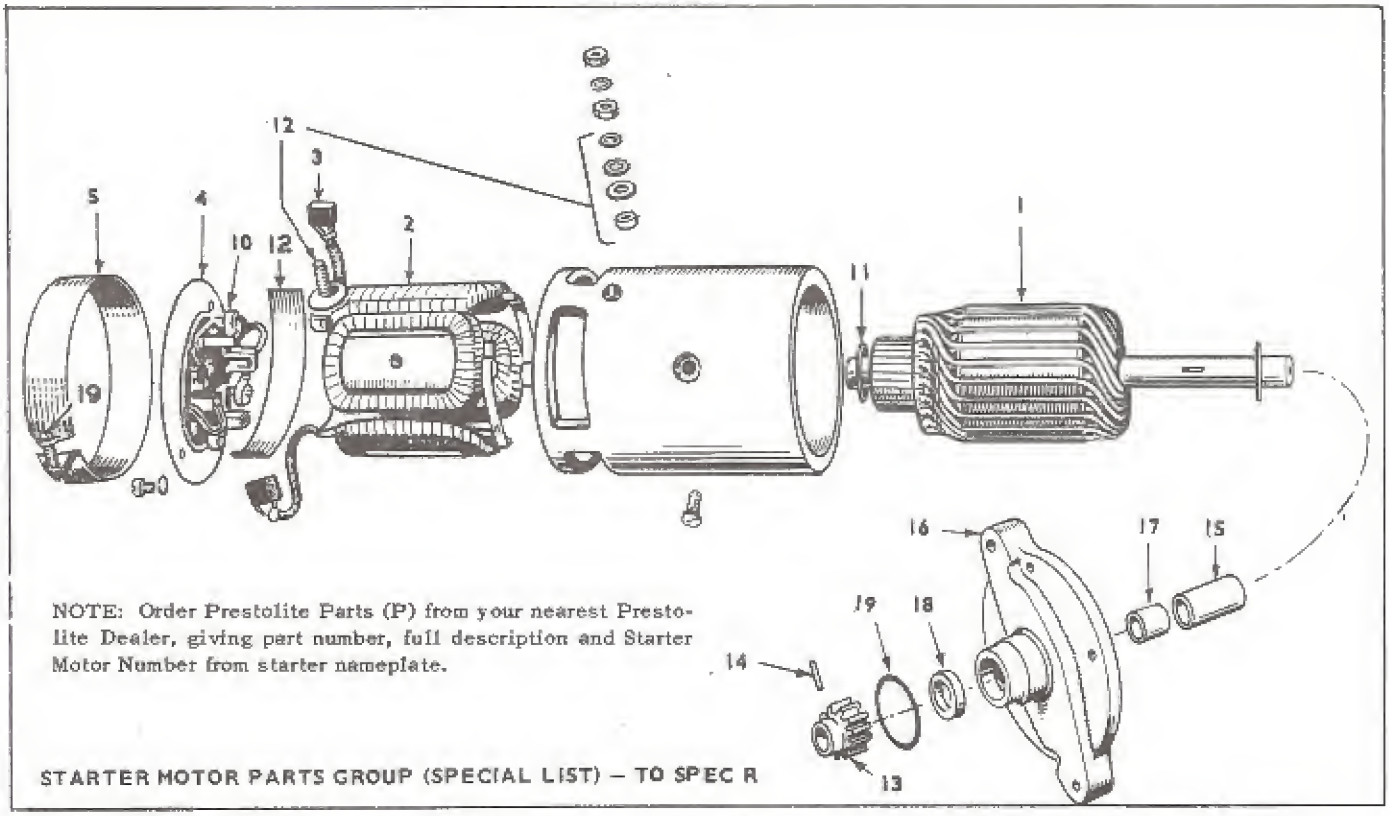
REF. NO.	PART NO.	QTY. USED	PARTS DESCRIPTION
1	103C252	1	Cover Assembly, Gear-Complete
2	103B231	1	Gasket, Gear Cover
3	103D225	1	Backplate, Gear Cover

STARTER MOTOR GROUP (SPECIAL LIST) – TO SPEC R





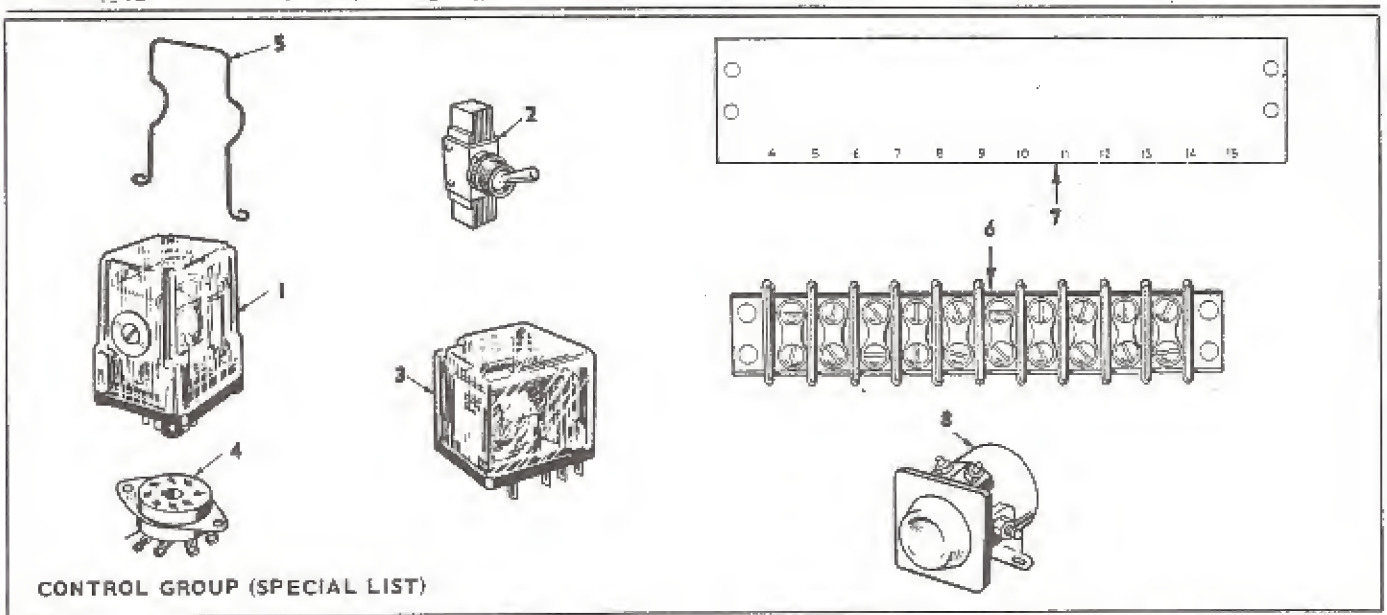
REF. NO.	PART NO.	QTY. USED	PARTS DESCRIPTION
1	191B453	1	Motor, Starter (12-V) Incl. Gear & Pin
2	191A342	1	Base and Shaft, Idler Gr.
3	518-196	1	Ring, Retaining - Idler Gr.
4	526-175	1	Washer, Thrust - Idler Gr.
5	191A457	1	Gear Assy., Idler
6	191B354	1	Gear & Clutch Assy., Crankshaft
7	509-93	1	Seal, "O" Ring - Starter Mtg.
8	338B327	1	Harness, Starter to Control



NOTE: Order Prestolite Parts (P) from your nearest Prestolite Dealer, giving part number, full description and Starter Motor Number from starter nameplate.

STARTER MOTOR PARTS GROUP (SPECIAL LIST) — TO SPEC R

REF. NO.	PART NO.	QTY. USED	PARTS DESCRIPTION
	191B453	1	Motor, Starting (12-V)
1	191A452	1	Armature
2	(P)20-14	1	Coil Assy., Field
3	191-513	1	Brush Set, Service
4	(P)19-27	1	Head Assy., Commutator End
5	(P)36-321	1	Band, Cover
10	(P)50-263	1	Spring, Brush (Set of 4)
11	(P)90-263	1	Washer Armature Thrust (Pkg.) Use as required.
12	(P)90-333	1	Stud, Terminal (Pkg.)
13	191A450	1	Gear, Pinion
14	516A154	1	Pin, Pinion Gear
15	191A451	1	Spacer, Armature to Adapter
16	191A446	1	Adapter
17	191P326	1	Bushing, Adapter
18	509-92	1	Seal, Oil Armature Shaft - Front
19	509-93	1	Seal, "O" Ring Starter Motor Mtg.



CONTROL GROUP (SPECIAL LIST)

REF. NO.	PART NO.	QTY. USED	PARTS DESCRIPTION
1	307P773	1	Relay-Start Disconnect & Ign.
2	308P5	1	Switch
3	307B860	1	Relay, Field Build-up
4	323-52	1	Socket, Relay
5	307P778	1	Spring, Holddown-Relay
6	332A751	1	Block, Terminal
7	332A608	1	Strip, Marker
8	307B845	1	Solenoid, Start-Begin Spec. L

GENERATOR GROUP, EXCITER PORTION (SPECIAL LIST)

NOTE: 04SX1N3B used on 120/240-V, 1-phase and 120/208-V, 3-phase, 60-cycle plants begin Spec L.
06SX5IN3B used on 120/240-V, 1-phase and 120/208-V, 3-phase 50-cycle plants begin Spec L.
Check plant nameplate for Magneciter number and use correct column in main list.